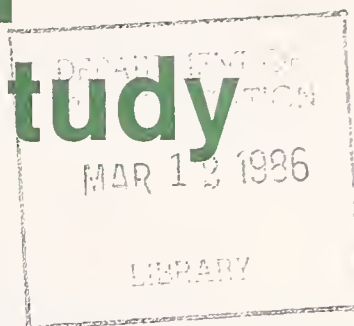U.S. Department
of Transportation

μtps
Microcomputers in transportation

Transit Inventory System Case Study

August 1985

To order the software described in this report,
send a check for $10.00 made out to "Rensselaer
Polytechnic Institute" to:
     Time Support Center
     RPI
     Civil Engineering Dept.
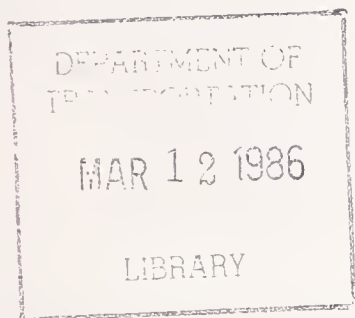   Troy, New York 12180-3590
     (Phone: (518) 266-6227)
Ask for "Transit Inventory System dBase Software"

Microcomputers in Transportation:
Transit Inventory System Case Study

Final Report
August 1985

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Prepared for
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16. Abstract

This report describes the process of designing and implementing a transit parts inventory control system for a 65 bus transit operator. The microcomputer software was developed using the dBase II database management software program on an IBM-PC system with a hard disk. Accompanying software on floppy disk for IBM-PC or compatible may be ordered. User must obtain a copy of dBase II to run this software. Software is modifiable by an individual knowledgeable on dBase II coding procedures.

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INTRODUCTION

This report describes the process of selecting, designing, and implementing a transit inventory control system for LANTA. It represents the third and final phase of an UMTA - sponsored project entitled "Microcomputer Applications to Transit Operations", initiated in April of 1983. This project is one of a number of DOT - sponsored activities designed to promote the use of microcomputers in the transit and highway industries.

In Phase I, several small and medium-sized transit agencies were contacted to determine their interest in participating in this project. Based upon these initial contacts, three agencies were chosen for participation in Phase I:

o   LANTA, Lehigh and Northampton Transportation Authority in Allentown/Bethlehem, Pennsylvania;

o   Sun-Tran of Albuquerque, New Mexico; and

o   RTD - The Regional Transportation District in Denver, Colorado.

After visiting these three agencies, two of the three (LANTA and Sun-Tran) were selected for participation in Phases II and III of the project. It was decided to implement an inventory system at LANTA and a personnel management information system at Sun-Tran. Details of this selection process are included in the Phase I report.

Phase II concentrated on the actual design of the Inventory System at LANTA and the Personnel Management System at Sun-Tran. The Phase II Report contains chapters defining the functions chosen for implementation at each agency and detailing the processes involved in the selection of hardware and software for each location. In addition, this report contains an Appendix describing a general methodology for determining microcomputer applications at public transit agencies, including general strategies for planning an information system as well as methods for evaluating and selecting microcomputer software and hardware.

This document reflects work undertaken at LANTA in Phase III of the described project; a separate Phase III document describes the Sun-Tran application. Using the LANTA microcomputer application as an example, it is structured to aid transit agency personnel in, a) grasping the fundamental steps in employing microcomputer systems to perform agency business functions, b) understanding how these systems are designed to fit into the existing operational environment, and c) understanding how

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these systems operate to carry out agency functions and generate important information. To achieve these objectives, the document not only covers Phase III system design efforts, but also incorporates background information drawn from the Phase I and II reports, thereby providing the system development context. Specifically, it consists of the following chapters:

1) Transit System Description. Most of this chapter was presented in the Phase I Report. It describes LANTA's basic system characteristics, including a profile of the agency's fleet composition/maintenance facilities and finances. The chapter contains an analysis of key transit performance indicators for LANTA. Both the description and the analyses emerged out of project team efforts to identify information system requirements through a better understanding of the agency's operational characteristics, weaknesses and needs.

2) Current Procedures. This chapter appeared in the Phase II report. It details the manner in which the LANTA inventory system operated before implementation of the computerized system.

3) Data Base Characteristics. This chapter contains information on the type of information to be stored in the data base. It includes field size estimates, the number of records of each type of file per year and overall data base size. It also indicates the uses that are expected to be made of the system.

4) System Documentation. This chapter includes the User Guide and System Documentation which contains descriptions of all of the files and complete program listings.

CHAPTER I - TRANSIT SYSTEM CHARACTERISTICS

From the outset of the project, LANTA management indicated an interest in implementing several automated information management systems, notably a maintenance inventory system, a run cutting system, payroll and budget status and board reports. No clear priorities had been established by the agency. But, in discussions with the project team, management leaned toward the inventory management system.

Before pursuing this option, however, project team members undertook a detailed examination of LANTA's operations in order to determine if these characteristics pointed to other automation improvements that might better serve the agency. This examination involved a general review of system characteristics -- the nature of the service supplied, the agency's organizational structure and circumstances that distinguish it from other, similar sized agencies. Equally important, it entailed a review of current and past ADP efforts.

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GENERAL INFORMATION

System Characteristics

The Lehigh and Northampton Transportation Authority (LANTA) was created in March 1972, as a bi-county authority responsible for the operation of bus transportation within and between Lehigh and Northampton Counties. LANTA provides regular-route bus services in 36 municipalities, including the cities of Allentown, Bethlehem, and Easton. Sixty-five regular coach buses provide service on 30 bus routes from 5 a.m. to 7 p.m. Monday through Saturday (no Sunday service). Of the 418,000 persons in the Allentown/Bethlehem/Easton metropolitan area, approximately 290,000 (69%) are within two blocks of a regularly scheduled bus route. Service currently operates on 30-minute headways during peak periods and 60-minute headways during off-peak period and all day Saturday. Service to physically and mentally handicapped individuals is provided by the Valley Association for Specialized Transportation (VAST), a private, nonprofit firm. VAST provides door-to-door service to those persons who live within LANTA's service area and are unable to use regular route service. Eight of the demand-responsive vehicles in the VAST fleet, each seating eight passengers, are owned by LANTA. A number of other agencies in the metropolitan area supply vehicles for the VAST fleet. VAST has its own Board of Directors, Executive Director, dispatching staff and drivers.

LANTA works on an exact fare system; drivers are not obligated to make changes. The basic fare system is as follows:

> 50¢   peak periods
> 40¢   10 a.m. to 3 p.m., all day Saturday
> 25¢   transfer charge

People 65 years of age or older may ride LANTA free of charge weekdays before 6 a.m., from 9 a.m. to 3:30 p.m., after 6:30 p.m., and all day Saturday. LANTA also encourages fare prepayment through the following arrangements: 10 trip tickets ($4.50); 40 trip tickets ($17.00), and an unlimited monthly pass (also $17.00). The 10-and 40-ride tickets can be purchased directly from LANTA drivers; both the ride tickets and the monthly pass can be purchased at LANTA's Allentown office and at other locations in Allentown, Bethlehem, and Easton.

Fleet Composition/Maintenance Facilities

LANTA's entire fleet (65 regular coaches, 8 demand-responsive vehicles) was manufactured by the General Motors Corporation (GMC). The demand-responsive vehicles are the newest members of the fleet, having been purchased in early 1983. All of the remaining vehicles are at least 10 years old, with 59 of these having been purchased in 1973. Although LANTA is clearly operating regular route service with an aging fleet,[1] 20 new Neoplan coaches have been scheduled for delivery in July of 1983.

Vehicle maintenance at LANTA is performed at two garages: one in Allentown (adjacent to LANTA administrative headquarters); and one in Easton. All major maintenance and inventory functions are performed at the Allentown garage. The Easton garage performs mainly light maintenance, including servicing, washing, fluids checking, and tire work.

Financial Information

LANTA's FY 1982 operating expenses totaled $4,830,722. Of this total, approximately 33% were covered by system-generated revenues (principally farebox revenues, special transit fares, charter service, and advertising). Another 31% ($1.5 million) was received through Section 5 operating assistance. The remaining 36% of LANTA's FY 1982 operating expenses were covered by a variety of sources, including $669,000 from the Pennsylvania Mass Transportation Assistance Program, and approximately $250,000 from local government contributions.

Organizational Structure

A total of 125 persons are employed by LANTA. They are governed by a 10-member Board of Directors, with 5 members appointed from Lehigh County and 5 appointed by Northampton County. Directly below the board is the Executive Director, who is responsible for day-to-day operations at LANTA. A basic organizational structure for LANTA is presented in Exhibit 2-1.

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[1] Actually, LANTA's average fleet age is close to the average national fleet age of 9.4 years according to the year III Section 15 Annual Report.

Exhibit 2-1

Microcomputer Applications to Transit Operations

LANTA ORGANIZATIONAL STRUCTURE
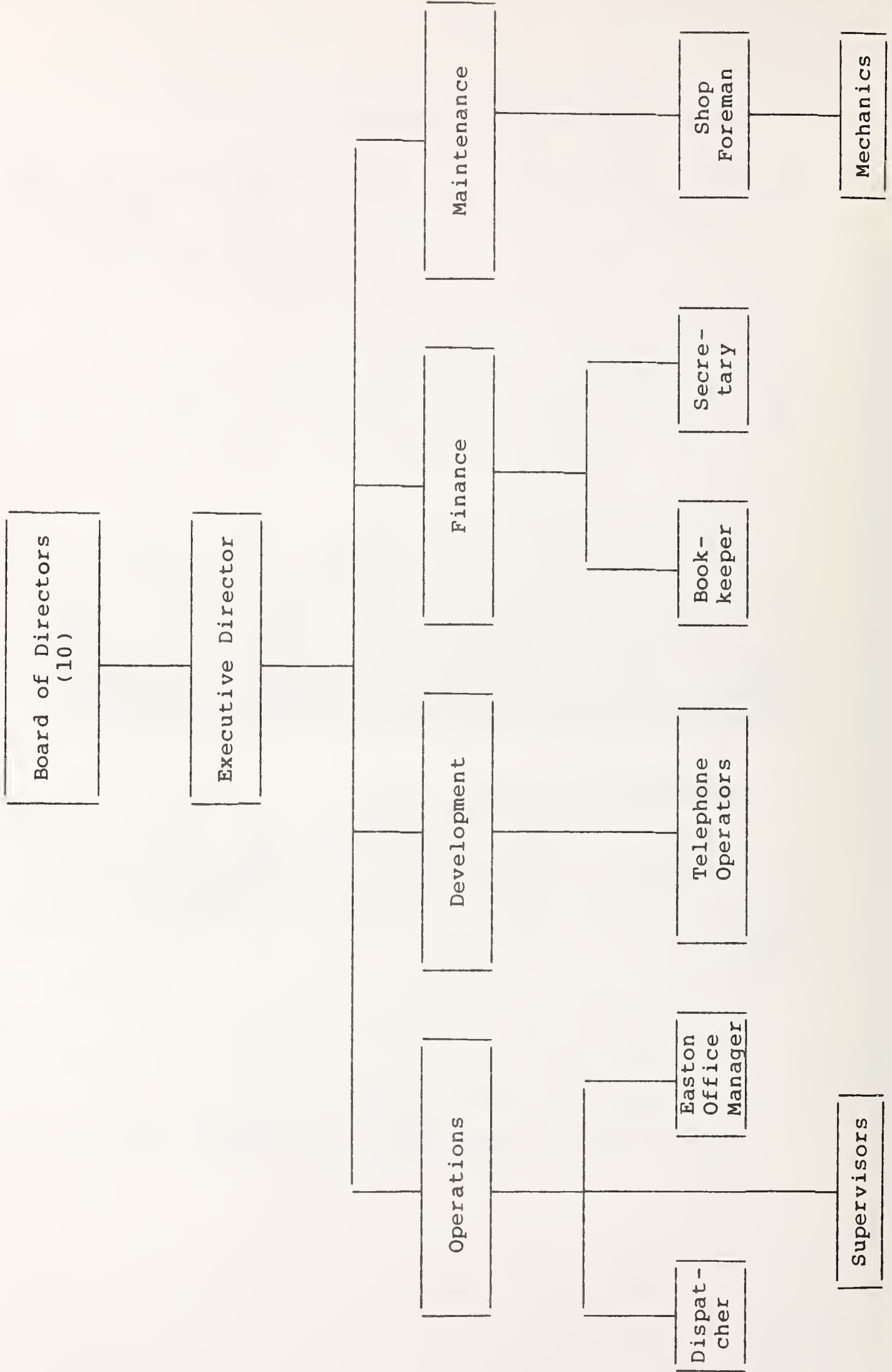
UNIQUE CIRCUMSTANCES

LANTA appears to be fairly typical of small transit agencies throughout the United States. Examination of several performance indicators in the FY 1981 Section 15 Annual Report shows significant differences between LANTA and other transit properties (in the 50-99 vehicle category) on the following indicators:

	LANTA	National Average	% Above (Below) Avg.
Section 5 funds/total revenue	51.80	26.0%	99.2
Operating cost/passenger trip	$0.80	$0.95	(15.8)
Passengers/vehicle mile	2.60	2.10	23.8
Miles between road calls	3,800	2,380	59.6
Administrative employees/ vehicle (p.m. peak)	0.21	0.15	40.0

LANTA's above average performance in obtaining Section 5 operating assistance (51.8% of operating expenses, which is 99% above the peer group average) declined considerably in FY 1982, when Section 5 funds covered only 32% of LANTA's operating expenses. No national averages are yet available for this indicator in FY 1982. Also, it should be noted that LANTA's higher than average score on the measure of "Administrative employees/vehicle (p.m. peak)" is counterbalanced by a score of 7.1% below the national average on the measure "Total employees per vehicle mile."

A trend analysis of LANTA's scores on these performance indicators from 1979 through 1982 (4 years) showed the following:

	1979	1980	1981	1982	Four-year[1] increase (decrease)
Section 5 funds/ total revenue	48.2%	32.6%	51.8%	31.8%	(34.0%)
Operating costs/ passenger trip	$0.64	$0.75	$0.95	$0.93	45.5%
Passengers/vehicle mile	2.5	2.5	2.6	2.4	8.0%
Miles between road calls	9,041.6	5,114.4	3,800.7	5,944.51	(34.3%)
Administrative employees/vehicle (p.m. peak)	0.18	0.16	0.21	0.15	(16.7%)

The four-year trend on these indicators shows the following:

o   Section 5 funding as a percent of total LANTA operating expenses has varied considerably over the past few years, although this percentage is expected to decline rapidly in future years because of federal funding constraints.

o   LANTA's operating cost/passenger trip, while rising, is consistent with overall national inflationary trends over this period.

o   Passengers per vehicle mile has remained fairly steady throughout the period.

o   Miles between road calls, although erratic, remain fairly high when compared to national averages.

o   Administrative employees/vehicle (p.m. peak) appears to have declined from a peak of 0.21 in 1981.

Interviews with LANTA staff uncovered two other unique circumstances that may have an impact on this study. These are:

---

[1]   Source: Section 15 Annual Reports, Years I through IV.

o   LANTA's parts inventory size may double after it receives all of
    the 20 new buses ordered from Neoplan. This increase is
    primarily due to the need for newer and different parts, since
    the remainder of the fleet was manufactured by GMC.

o   LANTA has planned a feasibility study and microcomputer purchase
    for later this year or early next year.

PAST AND PRESENT ADP EFFORTS

    LANTA currently has no in-house ADP capability. The staff does,
however, utilize an outside computer service bureau to handle general
ledger, payroll, and financial records. Raw data is provided by LANTA
staff to the service bureau, which inputs the data and provides budget
status reports. These reports, in addition to budgetary information,
contain ridership, revenue, and expense data. They are used principally
by LANTA management and the LANTA Board of Directors.

    It should be noted that a draft system design study for a VAST
Management Information System was submitted by a consultant in late
1982. At the present time, an evaluation of alternatives document and
final report are being completed. The goal of this study is to transform
VAST's current manual system of scheduling, dispatching, and reporting
into a fully automated system.

CHAPTER II - CURRENT INVENTORY PROCEDURES

LANTA has what is commonly referred to as a "perpetual" inventory system. This means that each time a transaction occurs between the mechanics and the parts clerk, the transaction is recorded and the inventory level is revised.

LANTA performs a physical inventory count each May, or approximately one month prior to the end of LANTA's fiscal year (June 30). LANTA uses a "first-in, first out" (FIFO) method of valuing its inventory. In the FY 1983 inventory count, the inventory was valued at approximately $80,000.

The parts clerk is the central figure in LANTA's inventory system. All inventory activities involve her in one way or another. There are, however, several other individuals or departments that have a role in this process, including the mechanics, the Director of Maintenance, and the Accounting Department. These individuals and departments will receive further attention in both the discussion below and the Appendix.

A number of discrete steps are involved in the inventory work flow at LANTA. The flow range of these is shown in Exhibit I-1. The most important steps are summarized below.

Step 1. Buses Selected for Maintenance Work

The inventory process begins at LANTA when individual buses are targeted for maintenance work. Buses may require maintenance for the following reasons:

1. as part of LANTA's regularly scheduled maintenance program;
2. because of an unanticipated breakdown;
3. as part of a campaign maintenance effort (e.g., repair all air conditioners).

Step 2. Bus Assigned to Mechanic

After buses are selected for maintenance, they are assigned to individual mechanics as a part of their daily work assignments. If major maintenance work is required on a bus, more than one mechanic may be assigned to work on that vehicle. If light maintenance is involved, one mechanic may be able to complete the entire job.

EXHIBIT I-1

Microcomputer Applications To Transit Operations
Inventory Work Flow - LANTA

Buses Selected For Maintenance — 1

Buses Assigned to Mechanic — 2

Mechanic Fills Out Stores Recquisition — 3

Parts Clerk Receives Stores Requsition — 4

Bin Is Checked — 5

STOCK OUT

SUFFICIANT QUANTITY

MINIMUM QUANTITY

Check Vender List — 7

Part's Drawn & Transaction Recorded — 6

Copy of Stores Requisition to Accounting

Complete Purchase Order & Send to Vender — 8

Copy of P.O. to Accounting

Part & Packing Material

Copy of Bill & Packing Slips to Accounting

Receive Part — 9

Part Distributed to Mechanic

Payment to Vender — 10

Step 3. Mechanic fills out Stores Requisition Form

In this step, the mechanic fills out a stores requisition form for bus parts based upon his/her work schedule for a particular day or a particular job. An example of a stores requisition form is included in Exhibit I-2. This form includes the part number, part description, and the quantity needed.

Requisitions are filled out primarily for all bin items. Smaller items (such as washers) are known as "charged out items." In effect, these charged out items are kept by mechanics at their individual work stations, and are not kept in inventory. Therefore, the charged out items (except in a few cases where charged out items are kept in inventory) do not require requisition forms.

Step 4. Parts Clerk Receives Stores Requisition

The mechanic then takes the requisition form to the Parts Clerk, who checks it for accuracy and adds any missing information, such as the part number.

Most of the activity involving requisitions occurs during shift changes, particularly when the morning shift begins at 8 a.m. To make sure that the requisition process flows smoothly during the morning peak period, the parts clerk usually begins her workday around 6 a.m.

Many requisitions request more than one part, the normal range being one to five parts per requisition. The parts clerk receives approximately 4,600 requisitions per year, or an average of 20 per work day.

Step 5. Bin is Checked for Part

After receiving the Stores Requisition form, the parts clerk takes the form to the bin where the part is located. Three situations may occur when she gets to the bin:

1. the part may be out of stock (often referred to as a "stock-out);
2. the part may be in stock, but at or below the minimum level specified on the inventory card; or
3. the part may be in stock and above the minimum quantity level specified on the inventory card.

Step 6. Part is Drawn and Transaction Recorded

If the part is available, it is drawn and given to the mechanic. The parts clerk then records the transaction on the inventory card, an example of which is shown in Exhibit I-3.

EXHIBIT I-2

Microcomputer Applications to Transit Operations

Stores Requisition Form, LANTA

This card contains the following basic information:

o   parts on order (if appropriate)
o   parts received
o   parts disbursed
o   parts in inventory (number, location)
o   minimum/maximum inventory levels
o   vendor names
o   vendor prices

These cards form the core of LANTA's inventory information system. They alert the parts clerk to the following:

o   part quantity
o   when it is time to reorder a part
o   when a part was last reordered
o   when a part was last used (disbursed)

Part Out of Stock or Below Minimum Level: Steps 7-10

Step 7. Check Vendor Lists/Manuals

If the part is out of stock or the number in stock is below reorder point, the parts clerk must reorder the appropriate part. From the yellow inventory card, the parts clerk notes the part number and searches the parts manuals of one or more vendors for the best price. Sometimes, a call is made directly to one or more vendors to check on recent prices or part availability.

Step 8. File Purchase Order and Send to Vendor

After the parts clerk has checked on the pricing and availability of an individual part, a purchase order is filled out by the parts clerk and signed by the Director of Maintenance (see Exhibit I-4). From there, the purchase order is sent to a vendor. A copy of this purchase order is also sent to the Accounting Department, where it is entered into the general ledger. In addition, the parts clerk notes each purchase order in a small notebook, which serves as the combined list for all purchase orders. When a question is raised regarding the status of a particular purchase order, such as the date the order was sent to a vendor, the parts clerk goes first to this notebook.

EXHIBIT I-4
Microcomputer Applications to Transit Operations

LANTA P-1

LEHIGH AND NORTHAMPTON TRANSPORTATION AUTHORITY
Twelfth and Cumberland Streets, Allentown, Pennsylvania 18103

Phone: (215) 435-6771

PURCHASE ORDER

_____ 19___

ORDER NUMBER
№ 5218

This number must appear on all invoices, shipping receipts, packing slips, cases, bundles and correspondence.

MAIL INVOICE IN DUPLICATE NOT LATER THAN DAY AFTER SHIPMENT DIRECT TO COMPANY.

DATE OF SHIPMENT
TERMS
F. O. B.
VIA

SHIP TO COMPANY AND ADDRESS SHOWN ABOVE

THE FULFILLMENT OF THIS ORDER IS AN ACCEPTANCE OF
THE CONDITIONS AND INSTRUCTIONS ON BACK HEREOF

QUANTITY	DESCRIPTION	PRICE	SEC.	CODE
	V O I D			

Authorized Signature

Step 9. Part is Received

After a part is received from the vendor, it is entered on the appropriate inventory card and stored in the proper bin. Copies of the bill and packing slips are then sent to the Accounting Department. If the part received is needed by a mechanic, it can be disbursed by the parts clerk at this time.

Step 10. Payment

After the Accounting Department receives copies of the bill and packing slip, payment is made, and information is sent to Accounting so that the appropriate general ledger account is debited. Sometimes the full order for a particular part is not received. When this happens, the parts clerk notifies the Accounting Department, and adjustments are made in the payment process.

Annual Inventory Valuation

At the end of May, approximately one month before the end of each fiscal year on June 30, LANTA takes a complete count of all items in inventory. This count is performed by mechanics under the supervision of the Director of Maintenance and the parts clerk. Working in teams of two, one mechanic counts a part while the other records the part number, description, location, cost and quantity on a ticket (one ticket per part). At the conclusion of the count, these cards are given to a service bureau for data processing. Two weeks later (on the average), a printout of all inventory items is received from the service bureau.

After the printout is received, the Maintenance Director and the parts clerk match the inventory totals on the inventory cards with the totals recorded on the printout, and any "shortages" or "overages" are noted. Sometimes, it may be necessary to recount a particular bin item if a large discrepancy is found. In addition, the cost of each part is entered on the computer printout manually, and multiplied by the number of parts in the inventory to get the inventory value. The parts are costed according to FIFO (first in, first out) accounting principles, as mentioned previously.

These last two steps are the most time-consuming part of the inventory valuation process, involving over 100 man-hours of effort. These steps must be accomplished by the close of the fiscal year, June 30, so that the inventory value can be properly represented in LANTA's financial reports.

Suggested Improvements

Although LANTA's inventory system is completely manual, it still has some very desirable characteristics that should be retained. For one, it is a perpetual inventory system; this means that LANTA is aware of the number of parts in its inventory at any particular point in time.* In addition, the inventory work flow appears to run smoothly for a manual system, which is partially due to the proficiency and experience of the parts clerk.

An attempt was made to determine the effectiveness of LANTA's inventory size. An inventory that is too large results in additional storage expenses and ties up funds that could be used for other purposes (opportunity costs). An inventory that is too small results in frequent stock-outs, which may have an impact on the number of buses available for service.

One frequently used measure of the effectiveness of inventory size is the inventory turnover ratio. This measures the number of days, on the average, that a part remains in inventory (or, correspondingly, the number of days it takes for an inventory to "turn over" completely). Based on an average inventory size of approximately $80,000 and total inventory purchases of $138,128 in FY 1983, LANTA's inventory turnover ratio is 1.7, or approximately every 215 days. This ratio appears to be in line with the inventories of similar types of industry, such as heavy equipment manufacturers.

A detailed review of LANTA's inventory procedures suggests several areas where initial improvements could be made through computerization. These areas include:

o   Paperwork
o   Reordering process
o   Yearly inventory count

Paperwork

As mentioned previously, the inventory cards are the prime source of inventory information at LANTA. These cards are filled out manually by the parts clerk, and mistakes can be made during peak periods. Even the process of merely locating cards for each individual part can be very time-consuming. In addition, no back-up appears to be available if the cards are damaged or lost.

_____

*   In a classic perpetual inventory system, the value of the parts in inventory could also be determined at any point in time. LANTA cannot accomplish this under its current system.

Other potential paperwork "log jams" include the following:

1. the purchase orders, especially keeping track of copies sent to the vendors and LANTA's Accounting Department; and
2. records of parts purchased (remember that the combined list of purchase orders is kept in a separate notebook by the parts clerk. This is a tedious process and subject to mistakes and damage.)

Reorder Points

As mentioned above, there is no evidence that LANTA's inventory, as a whole, is grossly overstocked or understocked. LANTA does not, however, keep detailed records of "stock-outs" to further evaluate reorder policies.

Examination of some inventory cards did reveal instances where parts on hand were stocked at a much higher level than the maximum number suggested on the inventory card. This may have occurred as a result of past policies to order additional parts when bargain prices were available.

LANTA would probably benefit from a more rigorous examination of its reordering policies when the system is computerized. There are four major factors in designing a reordering policy:

o   when to place an order for an item
o   how much of an item to order
o   what types of items to order
o   with whom to place the order

A reorder policy should have as its objective the minimization of total inventory costs and holding stock-outs to an acceptable level. In order to do this, four factors must be considered:

1. the annual demand for a part;
2. the carrying costs associated with holding a part in inventory (such as storage, insurance, theft, and opportunity cost); and
3. the ordering costs (such as supplies, ordering forms, and processing).
4. the amount of time to obtain a part after an order is placed.

The order quantity that produces the minimum total cost is called the "economic order quantity." Generally, the economic order quantity can be calculated through application of the following formula:

$$Q^{\#} = \sqrt{\frac{2 \, DO_c}{C_c}} \quad *$$

where
$Q^{\#}$ = optimum number of pieces per order
D = Annual demand in units for the inventory item
O_c = Ordering cost for each order
C_c = Carrying cost per unit per year.

Physical Inventory Count

LANTA's physical inventory count is processed by an outside service bureau. Apart from being very time-consuming (it takes approximately two weeks to get a printout back from the service bureau), individual parts prices must be added by LANTA staff manually after the printout is received. The amount of time it currently takes for this process to be completed is likely to increase dramatically with LANTA's new bus purchase. In addition, the current system requires a number of iterations before the physical inventory and information systems counts are in agreement. In May of 1983, the service bureau printout, after the prices were added in, noted an inventory value of approximately $82,000. LANTA's inventory count valued the inventory at $76,000. This 8% difference is considered significant by management, and should be targeted for improvement during the automation process. Special attention should be given to the activities of LANTA's maintenance shop during the night shift, when the parts clerk is not at work.

Computerizing this process should result in the following benefits:

o   The annual costs involved with the use of the service bureau for inventory valuation should be eliminated.

o   The time allocated for the inventory count (particularly the time involved in computing the inventory value) should be reduced.

o   It should be easier to locate inventory discrepancies, since a complete inventory count and valuation should be available to LANTA at all times.

---

*   Starr, Ralph and Barry Render. <u>Production and Operations Management, A Self-Correcting Approach</u>. Boston: Allyn and Bacon, Inc. 1980. Chapter 7.

CHAPTER III - DATA BASE CHARACTERISTICS

Before the selection process for microcomputer software was initiated, the characteristics of the inventory data base at LANTA were defined. Clearly, any software chosen for LANTA had to handle the existing inventory data, and ideally, any of the suggested improvements mentioned in the previous section. In addition, future ADP requirements at LANTA must also be taken into account in the software selection process.

In the discussion below, an attempt was made to identify the minimum information storage and information retrieval requirements of LANTA's information system, based upon our understanding of current and future data base requirements.

Information Storage

Information storage focuses on the types and amount of data necessary to maintain a data base. It focuses primarily on inputs. One of the key factors in information storage is the size of the data base.

The size of a data base is often dependent upon how data are organized. Generally, data are organized in a hierarchy which consists of the following elements:

o Characters. This is the smallest unit of data, and usually consists of a letter or number.
o Field. This is generally the smallest meaningful item of data, such as a social security number or a name.
o Record. A collection of fields that relate to a single unit is called a record. For example, a record might consist of all fields related to a part.
o File. A file is a grouping of all related records, such as part records.

An inventory software package for LANTA should be large enough to accommodate all data LANTA currently requires. The capability for additional data is desirable, as is the capability for growth.

The types of data that are used as inputs to the current inventory system at LANTA were described in the first part of this chapter. Four inventory files are already in use there: purchase orders, stores requisitions, vendor information, and physical inventory. In the discussion below, the files required to satisfy the computer data base are defined in terms of purpose, fields and estimates of bytes in each field. From these data, estimates were made of the number of records in each file at the end of the first two years of operation which established desired disk capacity.

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Inventory Data

Two files are required to store data on all parts and to record price and quantity transactions. The first file called INV later in this report, holds information such as part number, description, bin location, quantity, etc. One record of approximately 70 bytes is needed for each part. The second file called INVTRL holds information on each time parts are received into the system. This is necessary because costs are handled on a FIFO basis. Records in this file are keyed via part number to the first file, and other fields store quantity and cost data. Records of approximately 50 bytes are needed to store this data.

Vendor Data

Two files are required to store vendor data. Every time a part is received from a vendor, a record is created in the first file called VEND. The VEND file would contain records of approximately 100 bytes to store the vendor's code, master and vendor part numbers, date, costs and quantity. Records of the second file called VENDADD are keyed to the first file by vendor code. Records of approximately 200 bytes would be needed to hold name and address data.

Order Data

The order file called ORD holds data on each time a part is ordered. It holds data on Vendor, master and vendor part numbers, date ordered and received, quantity ordered and received, costs, description and general ledger COA number. Approximately 130 bytes would be needed for this file.

Receipt Data

This file called RCP holds data on each part received from vendors. It would hold data such as purchase order number, vendor code, part number, quantity and cost and date. Records of approximately 50 bytes would be needed.

Store Requisition Data

This file called STORES holds data or parts withdrawn from stock. A record is created each time a part is drawn. It contains the date, sequence number, bus number, mechanic initials or name, general ledger COA number, part number, description, quantity requested and drawn, type (bin or charged-out) and cost. Records of approximately 90 bytes would be needed.

<u>Data Base Size Estimate</u>

An estimate of the data base after the first and second year was made as shown below.

File	Record Size	Number of Records Year 1	Additional Records Year 2	Total Number of Records After Year 2	Total Bytes
INV	70	3,000	0	3,000	210,000
INVTRL	50	9,000	9,000	18,000	900,000
VEND	100	12,000	12,000	24,000	2,400,000
VENDADD	200	150	50	200	40,000
ORD	130	9,000	9,000	18,000	2,340,000
RCP	50	9,000	9,000	18,000	900,000
STORES	90	30,000	30,000	60,000	5,400,000
				Total	12,190,000

It is likely that records will be archived after the first year or 18 months so that, at any time, a user can obtain reports that cover the last six or 12 months. Thus a 10 megabyte disk would be capable of handling this size data base (one year of data requires slightly over 6 megabytes).

<u>Information Retrieval</u>

Information retrieval is concerned with the uses or processing of data after it is stored. The focus of information retrieval, therefore, is on <u>outputs</u>, or the reports to be generated.

There are three major departments at LANTA that will utilize inventory information: Maintenance, Finance (Accounting), and the General Manager's office. The information needs of each department must be taken into account in the choice of inventory software.

The maintenance department will require the most detailed inventory information. At a minimum, Maintenance will require reports on the following types of information:

o   physical inventory levels
o   purchase orders
o   reorder status information
o   part usage by category
o   vendor information

It is important that the information be available to the parts clerk on a daily basis, and that this information can be recalled quickly and efficiently.

In addition, the Maintenance Manager will require inventory information that will enable him to make decisions regarding activities such as bus campaign maintenance. For example, the Maintenance Manager may decide that it is time to repair the air conditioners on a whole group of buses. Before planning for this campaign maintenance program begins, he must know if the proper air conditioner parts are in adequate supply in inventory. If not, he must know how long it will take to order the proper types and quantities of parts, and, for budgeting purposes, the cost of ordering any required parts.

The information needs of the Accounting Department with respect to inventory will closely parallel that of the Maintenance department. Accounting will need information every time a financial transaction occurs (e.g., when a purchase order is executed, or when a part is delivered and vendor payment is required). Every transaction must be posted to the general ledger as kept by the Accounting Department. Depending upon the reordering activities of the Maintenance department, transactions may occur daily, weekly, or monthly. A record of these transactions is kept through purchase orders, packing slips, bills (as sent by vendors), and through the physical inventory record.

The inventory information needs of the General Manager are generally broader than those of either the Maintenance Department or the Accounting Department. Generally speaking, the General Manager will require the following types of inventory information:

o   budget information
o   exception reports
o   inventory levels
o   reorder problems

The General Manager will need this information in establishing organizational goals and in determining strategies to meet these goals. Thus, the information provided to the General Manager should generally be future-oriented, and geared towards strategic decision-making.

A summary of the inventory information/report requirements at LANTA is presented in Exhibit I-5. Although some information overlap is evident, the use of inventory information is different for each department. For example, different levels of reorder information are required by Maintenance, Accounting, and the General Manager. The Maintenance Department -- and especially the Parts Clerk -- will need detailed, summary, and exception information on all aspects of the reorder system. The Accounting Department may also need detailed and summary information, but only when financial transactions occur. At the top level, the General Manager needs summarized financial and exception information, such as a reorder irregularity. In summary, the inventory system at LANTA must be tailored to provide appropriate information to all levels.

EXHIBIT I-5: LANTA

Microcomputer Applications to Transit Operations

Inventory Information/Report Requirements - LANTA

Type of Information	Maintenance	Accounting	General Manager
Physical Inventory	D, S, E	D, S,	S, E
Purchase Orders	D, S, E	(Financial transactions)	S, E
Reorder Information	D, S, E	D, S (Financial transactions)	E
Inventory Usage by Category	D, S, E	S (Financial transactions)	S, E
Vendor Information	D, S, E	S (Financial transactions)	E
Stores Requisition	D, S, E	S (Financial transactions)	S, E
Budget	D, S, E	D, S	S, E

Key: D = Detailed
        E = Exception
        S = Summary

The data base should be constructed in a way that permits the various organizational levels at LANTA to receive either detailed, summary, or exception information as appropriate. In addition to the above characteristics, candidate inventory software packages should allow interface with other software packages, most notably spread sheet, accounting, and graphics packages. Although word processing was not indicated as a high priority item by LANTA management, capabilities for it should be provided in the software and hardware selection process.

A single-user microcomputer system, perhaps with a hard disk drive, appears adequate for LANTA's purposes. Any system configuration chosen for LANTA, however, should allow for possible expansion into a microcomputer network.

In order to be able to provide appropriate inventory information to the various departments at LANTA, it will be important to examine the data manipulation requirements of inventory software packages. Given the various departmental information requirements presented in Exhibit I-7, the following manipulative characteristics should be present for LANTA's inventory system:

o   Interfile Relationships/Merging Capabilities
o   Sophisticated Sorting, Selecting, and Searching Capabilities
o   Formula Calculation both within Fields and in Output Formats

Interfile relationships allow for the switching of data between files. For example, in order to handle FIFO valuation of inventory, two files are required. The first contains starter and summary information on each part, e.g., part number, description, bin location, minimum quantity (reorder point), total quantity on hand, etc. The second file holds dynamic information such as the quantity and price for each purchase. These records are stored chronologically so that parts are drawn out on a FIFO basis, i.e., oldest purchase first. Records in the two files are linked by part number.

Three capabilities, often called the "S's," are essential to efficiency of data manipulation, and are closely related to each other. A way to distinguish them is:

Sort: the _order_ in which data is retrieved for viewing (either on the monitor or in print), e.g., numerically by zip code or alphabetically by city within state

Select: the _specified records_ which will be viewed, e.g., all records in which "x" occurs in field "n"

Search: the capability of the computer to _look for_ a particular characteristic, e.g., the next record where field "x" equals "y".

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Sorting involves the arrangement of data elements into a predetermined sequence to facilitate processing, and relates to manipulations within an individual file. An example of a function using all three is: <u>searching</u> the file to locate those in which a transaction has been made within the past year; <u>selecting</u> from these any records with any characters in the purchase order field (indicating an open purchase order); <u>sorting</u> chronologically by date the records selected to produce a report of open purchase orders. In another situation, the Maintenance Manager might want to see a report which shows the number and location of air conditioning parts preparatory to campaign maintenance of air conditioners. Since the machine cannot identify which part is used in air conditioning, a person would do this (unless the file included a coded field for this purpose). Then, a report could be produced which lists parts in chronological order by part number. This feature may not be part of the initial inventory system, but may be incorporated if the system is expanded into a full-scale maintenance MIS.

Many software programs will create new files for the purpose of storing data which has been selected and sorted by the user in a particular logical order (as opposed to the random order on the disk). This process is "indexing," and permits very rapid access to the records in the specific order in which the user wants to see the data. Most software programs provide "pointers," data elements that give the storage location in logical order, in an indexed file, and permit almost immediate access to the next logical record. These functions make file manipulation easier, faster, and more efficient.

Formula calculations involve the ability of software packages to do arithmetic calculations, such as calculating reorder level formulas. This capability also allows for the construction of "what if" scenarios, such as the number of parts that could be ordered given a variety of price levels.

Finally, it is desirable that the inventory software package allow interface with other software packages. In particular, the following software packages might prove useful in addition to the chosen inventory package:

o   Spread sheet
o   Accounting (general ledger, accounts receivable, etc.)
o   Graphics

All of these packages would be useful to help analyze inventory information and present it in report format.

To summarize, the data base characteristics of LANTA's current and future inventory system dictate that any software package chosen have the following minimum capacity:

Information Storage Capabilities

o   multiple indexed files
o   75,000 records
o   30 fields per record
o   200 characters per field
o   10 megabytes of storage capacity

Information Retrieval Capabilities

o   Interfile relationships/merging
o   Sorting by at least 4 characteristics
o   Formula calculations, by field or report
o   Interface with other software packages

CHAPTER IV - SYSTEM DOCUMENTATION

A. SYSTEM DOCUMENTATION

I. INTRODUCTION

The Inventory Control and Information System has been implemented in dBASE II, 2.4 on an IBM PC with a hard disk using IBM PC DOS. Small inventory systems can be operated on a two floppy disk configuration. Since the system is implemented in dBASE II it can be modified easily to accommodate different requirements such as new fields, adjustments in field sizes, new record types, new displays of information in printed form or on the screen, and changes in operating rules such as using LIFO instead of FIFO.

Operation is menu driven with the 19 options shown in Table 1. A user can enter data on all transactions concerning inventory, obtain printouts and screen displays of data and produce printed purchase orders on standard forms. The first step in establishing the system is to use option 15 to create the current inventory by entering data on all parts. Once the data base has been established the user can enter data on withdrawal of parts using option 1, enter data on orders using option 3, etc. Each option is described in more detail in Section IV below.

The system uses seven files which are defined in Section III. The file INV has the basic inventory data on each part. It holds data on master part number, quantity on hand, etc. in one record per part. The INVTRL file holds data on parts and may have multiple records per part. Each time parts are received, a record is created for the INVTRL file.

TABLE 1

PROGRAM OPTIONS

Menu Display	Action
1. ENTER STORES REQUISITION	– To enter data from Stores Requisition forms.
2. GET STORES REQUISITION REPORT	– To list data entered using (1) above. User specifies dates to be included in report and selects one of the following four reports: (1) Details by Stores Requisition in Sequence # order (2) Details by bus – for one or all buses in bus # order (3) Details by mechanic – for one or all mechanics, sorted by name of mechanic (4) Totals by GL# – uses month in report date, sorted by GL#
3. ENTER ORDER INFORMATION	– To enter order information and print a Purchase Order.
4. GET OPEN ORDER REPORT	– To list all open orders (including ones that have been partially filled).
5. ENTER RECEIPT OF PARTS	– To enter data on parts received or to enter shipping costs for parts that were received previously.
6. GET INVENTORY LIST	– To get a list of all items in inventory. Displays total value of inventory and identifies parts which are at or below minimum values.
7. GET DATA SHEET FOR PI	– To get a data sheet for entering counts from physical inventory. Listed in bin location order.
8. ENTER PI COUNT INFORMATION	– To enter PI count data from data sheet obtained in (7) above.
9. GET PI REPORT	– Produces PI report showing dollar difference by part and overall. If quantity on hand is larger than the bin count, the item is marked with a series of seven asterisks. This must be run prior to (10), otherwise, all corrections will have been applied and there will be no differences between the quantity in the bin and the quantity in the computer.

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TABLE 1 (continued)

PROGRAM OPTIONS

Menu Display	Action
10. ADJUST INVENTORY DUE TO PI COUNTS	– Operate this program after all count data have been entered via (8) and reviewed in (9). This program makes corrections to the inventory records.
11. DISPLAY VENDOR INFORMATION	– To get a screen display of vendor price or address information. The user specifies vendor code and part # to obtain price information, or vendor code to obtain address information. The user may also modify address information.
12. DISPLAY ORDER INFORMATION	– To get a screen display of an order. The user specifies P.O. #.
13. DISPLAY INVENTORY RECORDS	– To get a screen display of an inventory item. The user specifies part #.
14. DISPLAY STORE REQUISITION INFORMATION	– To get a screen display of a Stores Requisition. The user specifies sequence # of the stores requisition.
15. CREATE INVENTORY RECORDS	– To create inventory records.
16. DISPLAY RECEIPT RECORDS	– To get a screen display of receipt information. The user specifies part #.
17. APPLY NEW $ VALUE FOR CHARGED-OUT	– To change threshold value used to distinguish between charged-out and bin items. Also used to change the designation of a part whose average price has changed.
18. ENTER VENDOR ADDRESS	– To enter vendor name and address information.
19. FINISHED FOR NOW	– To end use of inventory system. Select this before turning off the computer.

Then as parts are drawn, they are subtracted in FIFO order from INVTRL records. INV and INVTRL are linked by master part number. The STORES file contains data on parts as they are withdrawn by mechanics. These records include which mechanic drew the parts and for which bus. The VEND file contains vendor price information. Records are created for this file when parts are received and it holds data on vendor identification code, price paid, quantity delivered, etc. The VENDADD file contains name and address information on vendors. The ORD file contains information on all orders placed and includes data on quantity ordered and received, date ordered, etc. The RCP file contains information on all receipts by purchase order number and includes data on the vendor, quantity received, etc.

II. SPECIAL FEATURES

This section contains information on the special features implemented in the program. These features can be deduced by analyzing the detailed program listings found in Appendix B and are described here to facilitate understanding of the system and to identify procedures that may require modification to meet requirements of a new user agency.

FIFO - The system has been set up to draw parts in the order they were received. This has an impact on the cost of a part as it is withdrawn and on the value of the parts remaining in inventory. For example, assume that two orders for bushing, part number 723330 were received with the following quantity and cost:

Quantity	Cost Per Part	Date Received
10	$3.50	4/11/84
10	$4.00	11/4/84

This data would be held in two INVTRL records and the single INV record would show 20 on hand at an average cost of $3.75. If 12 were drawn on 3/5/85, the system would take the first 10 from the ones received 4/11/84 and the next two from the ones received 11/4/83. The cost of the withdrawal is computed as $43 (10x$3.50+2x$4.00). The INV record would be adjusted to show eight on hand at an average cost of $4.00. The INVTRL records would be adjusted to show zero quantity for the first record and eight in the second record.

Bin and Charged-Out Parts - Two categories of parts are maintained by the system and are coded B for bin and C for charged-out. Charged-out parts are expensed at the time they are received, whereas bin parts are expensed at the time they are drawn. At the time the inventory data are created (using option 15), the user specifies whether a part is charged-out or bin, using a system established threshold dollar value. As prices change, the user may wish to adjust the threshold value. This is accomplished by operating option 17, usually at a higher threshold, which produces a listing of all parts which have been changed and the total dollar impact. The user may also operate option 17 at the same threshold to determine if the average cost of any part has changed enough to require change in designation. Note that the threshold test is made on the average cost of an item as stored in the INV file.

Shipping cost - Shipping cost is included in the cost of a part. At the time parts are received, total cost plus the shipping cost are added and divided by the number received to obtain the unit cost of a part. In some cases, the shipping cost is not known when the part is received and when the shipping cost is received later, some, or all, of the part may have been withdrawn. The unit price calculation for the INVTRL and INV files uses the quantity remaining from the shipment at the time shipping cost is known to calculate the unit price. If the shipping cost is received after all of the parts for the relevant shipment have been drawn, the system tells the user to

expense the shipping cost and stores zero for average cost and quantity in the appropriate records of the INVTRL and INV files. The system calculates the unit price for the value stored in the ORD and VEND files by dividing the total cost plus shipping cost by the quantity received.

Parts Usage By Time Period, Mechanic, Bus or GL# - Since charged-out parts have already been expensed, the printouts obtained via option 2 list all parts indicating whether they are bin or charged-out. However the printout does not include the value of charged-out parts in the total dollar cost printout.

Stores Requisition - If a user shows more parts than the computer thinks are in the bin, the system will set the quantity on hand and average cost of the part to zero.

Adjustments Due to Physical Inventory - When adjustments are made due to a difference between the quantity on hand data in the computer file and the physical inventory count, the system records the change in the INV and INVTRL files. Quantity on hand and average cost are changed in the INV file according to the rules described above. A new record is created in the INVTRL file which uses the letter P and the MM YY digits of the month and year when the physical inventory was conducted to form a dummy PO #. The INVTRL file also records whether parts were added or subtracted in the field PIQNTY. This is done for each part changed by the physical inventory.

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<u>All Transactions Which Change Basic Data Are Recorded Permanently</u> –
Once the system data base is established by operating option 15, all
transactions are stored in one of the system files. Thus it is
possible to trace activities by part # by examining records in the
files.

<u>Enter One Or Two Cost Values For Parts</u> – When the initial values for
inventory are entered, the user may enter two sets of values. Each
set will contain data on quantity and cost. The system totals
quantity and computes average cost for storage in the <u>INV</u> file. Two
records are created for the <u>INVTRL</u> file which are drawn from in FIFO
order.

<u>Making Corrections To Inventory Records</u> – The system creates and
stores a transaction each time parts are withdrawn or added. This
includes the original creation of data, withdrawal with a Stores
Requisition, receipt of parts due to an order and additions and
subtractions due to physical inventory. It is expected that once the
data have been entered into the <u>INV</u> and <u>INVTRL</u> files they will be
changed only attendant to one of these actions. In order to modify
data such as quantity on hand and cost, the user must be familiar
with dBASE II and with the file designs and interrelationship of
related records in the <u>INV</u> and <u>INVTRL</u> files. Most users will not
have these skills. Accordingly, a program named <u>DLT</u> should be run by
typing <u>DO DLT</u> from the dBASE dot prompt. The user can delete all
records for a particular part in the <u>INV</u> and <u>INVTRL</u> files by entering
the part number when requested by the <u>DLT</u> program. Once the data on
a part have been deleted the user can then use the create data option
(#15) to enter correct data.

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III. FILES

The seven files used to store data are defined in dBASE II format in Table 2. The columns are defined as follows:

```
FLD     - field number: 1, 2, etc.
NAME    - field name: PART for part number, DESC for description, etc.
TYPE    - type of data: C for characters and N for numberic
WIDTH   - number of characters or digits in field
DEC     - number of digits to right of decimal point for numeric fields
```

For each file type the total number of characters in a single record is displayed at the end of the definition. Thus for example, each INV record holds 66 characters. Each file contains a field named part which is used to cross reference information on a particular part. Price related data are stored in the files to account for various situations. Table 3 presents definitions of the price related fields in the relevant six file types. In addition to the seven files, the system creates two special subsets for calculations and listings. These are STRPRNT used to select portions of the STORES file for printout and THTEST used to compute the dollar impact of varying the threshold value for charged-out and bin items.

Index files are used by dBASE II to permit random access to files. The index files and how they are indexed are as follows:

File	Index File	Field On Which Indexed
INV	PARTIND	PART
INV	LOCIND	LOC (Bin Location)
INVTRL	TRLIND	PART
VEND	VENPARIN	VEND + PART (Vendor & Part)
STORES	SEQIND	SEQ (Sequence No. of Stores Requisition)
ORD	ORDPOIND	PO
RCP	RCPIND	PART
VENDADD	ADDIND	VEND
STRPRNT	SEQ2IND	SEQ (Sequence No. of Stores Requisition)
STRPRNT	MECHIND	Mech (Mechanic)
STRPRNT	BUSIND	Bus (Bus #)
STRPRNT	GLIND	GL (General Ledger #)
THTEST	NONE	N/A

```
D:\ >
STRUCTURE FOR FILE:   D:INV      .DBF                    TABLE 2
NUMBER OF RECORDS:    00250
DATE OF LAST UPDATE: 01/01/80                      FILE DEFINITIONS
PRIMARY USE DATABASE
FLD        NAME      TYPE WIDTH   DEC
001     PART        C     013
002     DESC        C     020
003     LOC         C     005
004     TYPE        C     001
005     QOH         N     004
006     MINQ        N     003
007     MAXQ        N     004
008     AVG         N     011     002
009     PICNT       N     004
** TOTAL **               00066


.
STRUCTURE FOR FILE:   D:INVTRL  .DBF
NUMBER OF RECORDS:    00283
DATE OF LAST UPDATE: 01/01/80
PRIMARY USE DATABASE
FLD        NAME      TYPE WIDTH   DEC
001     PART        C     013
002     QNTY        N     004
003     PRC:DLV     N     011     002
004     SHP:COST    N     005     002
005     PO          C     005
006     UNT:PRC     N     011     002
007     PIQNTY      N     004
** TOTAL **               00054


.
STRUCTURE FOR FILE:   D:VEND     .DBF
NUMBER OF RECORDS:    00248
DATE OF LAST UPDATE: 01/01/80
PRIMARY USE DATABASE
FLD        NAME      TYPE WIDTH   DEC
001     VEND        C     004
002     PART        C     013
003     OPART       C     013
004     DESC        C     020
005     PRC:DLV     N     011     002
006     SHP:COST    N     011     002
007     UNT:PRC     N     011     002
008     QNTY:RCV    N     004
009     DATE:RCV    C     008
** TOTAL **               00096
```

TABLE 2 (continued)

```
.
STRUCTURE FOR FILE:   D:ORD      .DBF
NUMBER OF RECORDS:    00012
DATE OF LAST UPDATE: 01/01/80
PRIMARY USE DATABASE
FLD        NAME      TYPE WIDTH   DEC
001     VEND         C    004
002     PART         C    013
003     OPART        C    013
004     DATE:ORD     C    008
005     DATE:RCV     C    008
006     QNTY:ORD     N    004
007     QNTY:RCV     N    004
008     MUL:DLV      C    001
009     PO           C    005
010     PRC:DLV      N    011     002
011     SHP:COST     N    006     002
012     DESC         C    020
013     GL           C    008
014     PRC:QT       N    011     002
015     UNT:PRC      N    011     002
016     TYPE         C    001
** TOTAL **              00129


.
STRUCTURE FOR FILE:   D:STORES  .DBF
NUMBER OF RECORDS:    00008
DATE OF LAST UPDATE: 01/01/80
PRIMARY USE DATABASE
FLD        NAME      TYPE WIDTH   DEC
001     DATE         C    008
002     SEQ          N    007
003     BUS          N    004
004     MECH         C    010
005     GL           C    008
006     PART         C    013
007     DESC         C    020
008     QR           N    004
009     QD           N    004
010     TYPE         C    001
011     AVG          N    011     002
** TOTAL **              00091
```

TABLE 2 (continued)

```
. DISP STRU
STRUCTURE FOR FILE:   D:RCP       .DBF
NUMBER OF RECORDS:     00004
DATE OF LAST UPDATE: 01/01/80
PRIMARY USE DATABASE
FLD        NAME       TYPE WIDTH     DEC
001     PO            C      005
002     VEND          C      004
003     PART          C      013
004     QNTY:RCV      N      004
005     PRC:DLV       N      011      002
006     SHP:COST      N      005      002
007     DATE          C      008
** TOTAL **                  00051


.
STRUCTURE FOR FILE:   D:VENDADD .DBF
NUMBER OF RECORDS:     00004
DATE OF LAST UPDATE: 01/01/80
PRIMARY USE DATABASE
FLD        NAME       TYPE WIDTH     DEC
001     VEND          C      004
002     NAME          C      030
003     LINE1         C      030
004     LINE2         C      030
005     LINE3         C      030
006     LINE4         C      030
007     LINE5         C      030
** TOTAL **                  00185
```

TABLE 3

Definitions Of Price Related Fields In System Records

INV
    AVG - Average unit price of the item in inventory

STORES
    AVG - Average unit price of the item withdrawn in a requisition
        (calculated from PRC:DLV+SHP:COST data in INVTRL records)

VEND
    UNT:PRC - Unit price of item at time of delivery (including shipping)
    PRC:DLV - Total cost for item at time of delivery (not including
        shipping)

RCP
    PRC:DLV - Total price of delivered items (not including shipping)
    SHP:COST - Total shipping cost of delivered item

INVTRL
    UNT:PRC - Unit price of item at time of delivery
    PRC:DLV - Total price of item at delivery (not including shipping)
    SHP:COST - Total shipping cost of item at or after delivery

ORD
    SHP:COST - Shipping cost of item
    PRC:DLV - Total cost of item at time of delivery
    PRC:QT   - Unit price quoted
    UNT:PRC - Unit price of item as delivered (includes shipping)

Thus, for example, the file INV can be accessed by specifying part number using the index file PARTIND. Random access is accomplished quickly from the hard disk. All of the index files except VENPARIN are indexed on a single field. VENPARIN is indexed on vendor (code) plus part (#) and allows random access to a record of the VEND file using vendor and part combinations.

IV. PROGRAMS

Figure 1 displays the programs and files that are used by each of the 19 options. As shown when the computer is turned on, the AUTOEXEC.BAT file boots to dBASE II and then to the program called CAPS. CAPS is executed to ensure that the LOCK^CAPS key is pressed, thereby entering only capital letters. Once the user passes the LOCK^CAPS key and U, the system produces the menu of options. The paths from the options are labeled 1 through 19, thus to enter stores requisition data, the user presses 1 and the return key. Program ENSTR is executed and returns control to the main menu. Three indexed files are used in this program:

    INV INDEX PARTIND (PRIMARY)
    STORES INDEX SEQIND (PRIMARY)
    INVTRL INDEX TRLIND (SECONDARY)

In some programs a second and third program are called. For example, when the user wishes to obtain a listing of stores requisitions and presses 2 and the return key, program SRLST is executed. It uses two files: STORES and STRPRNT. The user is asked which of four options are desired:

    (1) Details For Time Period
    (2) Details by Bus
    (3) Details By Mechanic
    (4) Details By GL# For Month

As shown, if suboption 1 is selected the system uses file STRPRNT INDEX SEQ2IND, suboption 2 uses STRPRNT INDEX BUSIND and so forth. All suboptions then execute programs SRLN and HDRSTR and then return control to the main menu.

Figure 1. OVERALL FLOW
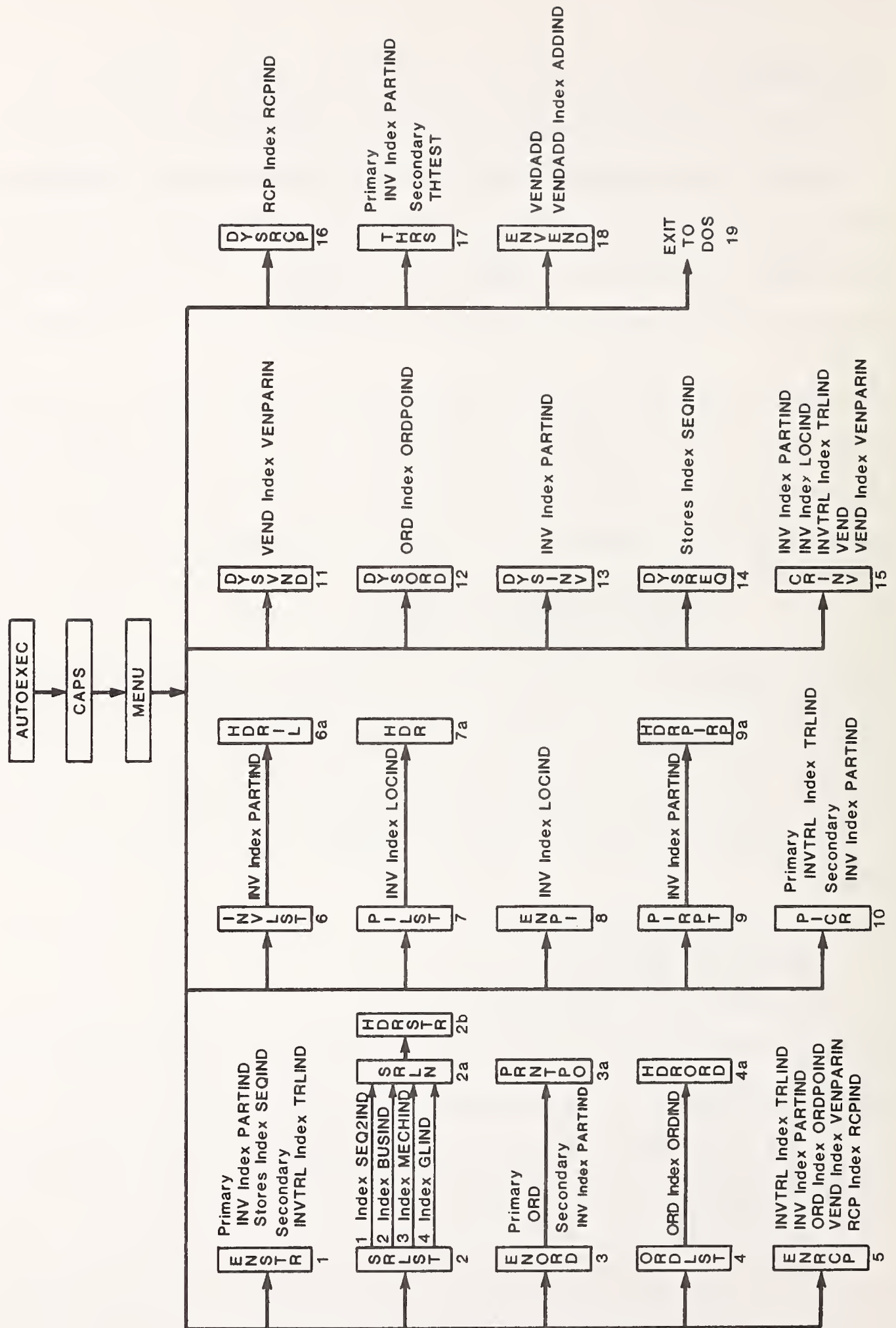
B. User Guide

GENERAL

You may obtain an executable version of this inventory package for a
nominal copying charge. See ordering instructions on "Technical Report
Documentation Page" in front of this report. You must have your own copy of
dBase II and an IBM-PC or compatible computer. The "walk through" below,
together with this report, should be sufficient to familiarize you with the
functions of the package. Beyond that, you will need to obtain the services
of a person knowledgeable in dBase II to make it operational for your
particular application.

To run the "walk through" below, first make a copy of the inventory
system disk, do not use the original. Boot up your copy of dBase II in
drive A. Place the copy of the inventory system disk in drive B. Set
caps lock on.

Say:

    . SET DEFAULT TO B

    . DO MENU

If you get to the point where you feel the system might be usable for
your agency but you feel this "walk through" is not answering all your
questions, it is time to obtain the services of a dBase "expert"!

TABLE 1

PROGRAM OPTIONS

Menu Display	Action
1. ENTER STORES REQUISITION	– To enter data from Stores Requisition forms.
2. GET STORES REQUISITION REPORT	– To list data entered using (1) above. User specifies dates to be included in report and selects one of the following four reports: (1) Details by Stores Requisition in Sequence # order (2) Details by bus – for one or all buses in bus # order (3) Details by mechanic – for one or all mechanics, sorted by name of mechanic (4) Totals by GL# – uses month in report date, sorted by GL#
3. ENTER ORDER INFORMATION	– To enter order information and print a Purchase Order.
4. GET OPEN ORDER REPORT	– To list all open orders (including ones that have been partially filled).
5. ENTER RECEIPT OF PARTS	– To enter data on parts received or to enter shipping costs for parts that were received previously.
6. GET INVENTORY LIST	– To get a list of all items in inventory. Displays total value of inventory and identifies parts which are at or below minimum values.
7. GET DATA SHEET FOR PI	– To get a data sheet for entering counts from physical inventory. Listed in bin location order.
8. ENTER PI COUNT INFORMATION	– To enter PI count data from data sheet obtained in (7) above.
9. GET PI REPORT	– Produces PI report showing dollar difference by part and overall. If quantity on hand is larger than the bin count, the item is marked with a series of seven asterisks. This must be run prior to (10), otherwise, all corrections will have been applied and there will be no differences between the quantity in the bin and the quantity in the computer.

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TABLE 1 (continued)

PROGRAM OPTIONS

Menu Display	Action
10. ADJUST INVENTORY DUE TO PI COUNTS	– Operate this program after all count data have been entered via (8) and reviewed in (9). This program makes corrections to the inventory records.
11. DISPLAY VENDOR INFORMATION	– To get a screen display of vendor price or address information. The user specifies vendor code and part # to obtain price information, or vendor code to obtain address information. The user may also modify address information.
12. DISPLAY ORDER INFORMATION	– To get a screen display of an order. The user specifies P.O. #.
13. DISPLAY INVENTORY RECORDS	– To get a screen display of an inventory item. The user specifies part #.
14. DISPLAY STORE REQUISITION INFORMATION	– To get a screen display of a Stores Requisition. The user specifies sequence # of the stores requisition.
15. CREATE INVENTORY RECORDS	– To create inventory records.
16. DISPLAY RECEIPT RECORDS	– To get a screen display of receipt information. The user specifies part #.
17. APPLY NEW $ VALUE FOR CHARGED-OUT	– To change threshold value used to distinguish between charged-out and bin items. Also used to change the designation of a part whose average price has changed.
18. ENTER VENDOR ADDRESS	– To enter vendor name and address information.
19. FINISHED FOR NOW	– To end use of inventory system. Select this before turning off the computer.

PROGRAM OPTIONS

1. ENTER STORES REQUISITION

    The system will request the date and sequence number of the STORES

REQUISITION. It is expected that you will operate this option each day

and enter all data for the day. However, you may enter data from several

days. The system will request the date and a 1 to 7 digit sequence

number [enter any number].* (You can terminate operation and return to

the menu by entering a zero sequence number). After specifying the

sequence number, you will be asked to enter the following:

>   Bus # [up to 4 digits] [8301]
>   Mechanic's Initials [2 characters] [GB]
>   Gen Ledger # (NOTE: YOU DO NOT ENTER THE DECIMAL POINT)[504.9902]
>   [press return to accept default value]
>   Master Part # [AN2205007]
>   Quantity Requested by the Mechanic [any][1]
>   Quantity Delivered to the Mechanic [any][1]

If the system does not have any information on the part number entered

(usually because the part number was entered incorrectly), you will get a

message:

>   CANNOT FIND PART, PLEASE REENTER DATA

The system will wait for you to reenter the data. If you attempt to draw

more parts than are on hand, the system will display:

>   YOU DO NOT HAVE ENOUGH TO SATISFY REQUEST
>   FOR NNNN OF XXXXXXX (Description of Part)
>   ENTER I TO IGNORE OR RETURN TO REENTER DATA

---

*Figures or instructions in square brackets may be used to demonstrate
 the system.

If you enter an I, the system will accept the entry and set quantity on hand and average cost to zero. If you press _return_ the system will ask for data to be reentered. If the system finds the part in the data base it will then display the part description and type (B-for bin and C-for charged-out) and ask if there are any corrections by displaying:

ENTER C IF YOU WISH TO MAKE CORRECTIONS

WAITING

Press C if you wish to change any data value or _return_ to instruct the system to enter these data into the data base. At this point the system will reduce quantity on hand and adjust average cost of the part, calculate the value of the STORES REQUISITION, etc. The system will ask if there are more data for the Store Requisition:

ENTER M IF YOU HAVE MORE DATA

WAITING

If an M is entered the system will prompt you to enter more data for the same STORES REQUISITION. If not, the system will ask if data for another STORES REQUISITION are to be entered:

ENTER A IF YOU HAVE ANOTHER STORES REQUISITION

WAITING

If you enter an A the system will prompt you to enter data for another STORES REQUISITION. If you press _return_ the system will display the options screen and wait for your next command.

If you find that one or more parts were left out of a requisition, you may enter more data under a previously used sequence number and date. The new data will be coordinated by the computer with the previously entered data.

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Note that bus number is a four digit numeric field. If you wish to keep track of parts drawn for the shop or for the building or other, you must make up codes for each. For example, you could use 9001 for shop, 9002 for building, etc.

2. GET STORES REQUISITION REPORT [Turn printer on]

Enter date of report and start and end dates of the period to be covered. You must enter two digits for a month by entering the leading zero, 03 for March, 04 for April and so forth. The start date must be earlier than the end date. You can get a report covering a single day by entering the same date. Likewise, you can get a report covering a single month by entering the first and last day in the DD portion and the same value for the month in the MM portion and year in the YY portion. The system then will display a menu as follows:

```
ENTER TYPE OF REPORT DESIRED
1 - Details For Time Period [03/20/85-03/21/85]*
2 - Details By Bus [8301]
3 - Details By Mechanic [GB]
4 - Totals By GL # For Month [03/01/85-03/31-85] [Doesn't work]
```

1. Details for time period will list all information for the time period you specify. The data for all bin items will be printed in sequence # order. A dollar total of all bin parts drawn in the time period will be printed at the bottom of the listing.

2. Details by bus will produce a listing of all information for a single bus or for all buses. It will also print the dollar total at the bottom of the listing.

3. Details by mechanic will list all information for the mechanic whose initials are entered or all mechanics may be selected. If all mechanics are selected the listing will be by mechanic. You can select any time period for this listing.

4. Details by GL # for month will list all information for the month of the report. It will print the dollar total each GL# and the dollar total for all parts.

---

*Figures or instructions in square brackets may be used to demonstrate the system.

You select one of these options and proceed to enter data. When completed, the system will return to option screen.

3. ENTER ORDER INFORMATION

Use this to enter a purchase order. First enter the date, PO # [up to 5 digits]* and vendor code** [NEOP]. The system will display the name and address of the vendor and ask for corrections. After the data have been verified and corrected as necessary, you then enter the master part # [AN2205007] (and the part # used by the vendor if different than the master #), the quantity ordered, unit price quoted, GL # and type (B or C). The system prompts for more parts under the same purchase order until all data have been entered. You then have the option to display the purchase order on the screen or print or cancel it. After you·have selected one of these options the system returns to the start of the purchase order routine. You enter a blank # to return to the main menu of options.

As discussed in #15, you should enter all open orders at the time the system is established.

4. GET OPEN ORDERS REPORT [Turn Printer On]

Use this to get a listing of all open orders. This includes all information put into the PO: vendor, part #, description, date ordered, quantity ordered, quantity received, price quoted, PO #, price at delivery, shipping cost and unit price (computed by the system).

---

*   Figures or instructions in square brackets may be used to demonstrate the system.

** You must have entered the vendor code and name and address previously using option 18.

5. ENTER RECEIPT OF PARTS

Use this to enter data on receipt of parts [use the P.O. # entered in Option 3].* You will be prompted to enter a zero for quantity received if you are entering shipping cost data after the parts have been received (if you only enter shipping cost the system will recompute cost of the part based on the number of parts left from the shipment). You will enter the vendor code [NEOP], part # [AN2205007], quantity received [up to 9999], the total cost for the part (the system will compute the unit cost) [up to 9999999.99], and the total shipping cost for the part [up to 999.99]. As in the case of all data entry the system will ask if you have any corrections and display a message if it cannot find the part #.

The system will then enter the information in the following files: the inventory (INV & INVTRL) for quantity on hand and cost, the order (ORD) to indicate it has been filled, and vendor (VEND) to record costs. The system will also enter data into the receipt (RCP) file to record this event. If the part #-vendor combination cannot be located you will see a screen display and asked to reenter data. [Takes long time on floppies!]

If you enter only shipping cost for a part that has been drawn down to zero, the system will display a message telling you to expense the shipping cost as follows:

> YOU HAVE NO QUANTITY ON HAND FOR PART #-DESCRIPTION
> PLEASE EXPENSE A SHIPPING COST OF $NN
> PRESS RETURN TO CONTINUE
> WAITING

---

*Figures or instructions in square brackets may be used to demonstrate the system.

6. GET INVENTORY LIST

This produces a listing of all items in inventory (both bin and charged-out). Parts which are below minimum quantities are flagged with *******. The total value of all parts in inventory is printed at the bottom of the report.

7. GET DATA SHEET FOR PI

This produces a listing of all parts in inventory (both bin and charged-out) in bin # order. Each line contains the bin #, part #, description, and type (B for bin and C for charged-out). You enter counts in the last column labeled # IN BIN FROM COUNT. These counts are used in option 8.

8. ENTER PI COUNT INFORMATION

Use this to enter count data from the physical inventory. You will be prompted on the screen with the part #, description, and bin location. After you enter the count you can advance to the next bin location, back up to the previous location or go to any part #. It is expected that you will enter count data, obtain a PI report using option 9 and identify counts that appear to be incorrect (either they were counted wrong or the data were entered incorrectly). You can correct individual count values by operating this option and asking for a specific part rather than running through the entire list. If you enter an incorrect part #, the system will display an error message and ask you to reenter the part #.

9. GET PI REPORT

   This produces a listing of each part (B or CD) showing quantity on hand stored in the computer, the physical inventory count and the dollar value of the difference. The dollar value of the difference uses the average unit cost. A ******* is printed next to each part where the quantity on hand is not equal to the physical inventory count.

10. ADJUST INVENTORY DUE TO PI COUNTS

   Use this AFTER ALL COUNT CORRECTIONS have been entered using option 8. This program applies corrections to the data stored in the computer. After all corrections have been made the system will print the total value of all changes due to the physical inventory. All physical inventory counts that are lower than the count in the computer are valued on a FIFO basis. All counts that are higher than the count in the computer are valued at the average cost of the stock on hand for the part.

11. DISPLAY VENDOR INFORMATION

   This produces a screen display of the description, price (the total cost for that part at the time of delivery except for shipping), the shipping cost (total for that part), the unit price, and the quantity received. You enter the vendor code [NEOP]* and the part # [AN2205007]. If you desire you can scan through successive part data by pressing the return. Scanning is in part order within vendor order. The system will display an error message if it cannot find the vendor and part combination. You may also obtain a display of address information by selecting an A from the initial message. You may also change any line in the address.

---

*Figures or instructions in square brackets may be used to demonstrate the system.

12. DISPLAY ORDER INFORMATION

This produces a screen display of information on a purchase order. Scanning is in purchase order # sequence [2000].*

13. DISPLAY INVENTORY RECORDS

This produces a screen display of all information on a part. You enter part # and the system displays the description, bin location, etc. Scanning is in part # sequence [AN2205007].

14. DISPLAY STORES REQUISITION INFORMATION

This produces a screen display of all information in a Stores Requisition. Scanning is in requisition # order [10001].

15. CREATE INVENTORY RECORDS

This is used to set up inventory at the time the system is started. You enter the master part #, other manufacturer's #, bin location, type (B or C), the quantity on hand and unit price (you can enter quantity and price for up to two values), the minimum quantity on hand, the maximum quantity on hand and the vendor code. You may add two records for a part to reflect quantities obtained at different times with different costs. Enter the data in FIFO order so they will be withdrawn in order of purchase. In addition to start up, this option is used if you add a part to inventory after the system is in operation.

When the inventory system is set up you may have open orders. The best way to handle open orders is to enter them using option 3.

---

*Figures or instructions in square brackets may be used to demonstrate the system.

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16. DISPLAY RECEIPT RECORDS

This produces a screen display of all information on receipt of parts for a part. Scanning is in part # order [AN2205007].*

17. Apply New $ Value For Charged-Out

Use this to change the dollar value threshold between charged-out and bin parts. All bin items which are below the threshold value will be changed to charged-out. All charged-out items which are above the threshold value will be changed to bin. This option can be run to test whether average cost of parts in stock have changed relative to the current threshold dollar value and hence part needs to be reclasified. It can be run to change the threshold dollar value which will reclassify all parts which were bin and are now below the threshold, or all parts which were charged-out and are now above the threshold.

The system will ask for the threshold value and calculate the total dollar amount of the changes. The quantity on hand is multiplied by the average cost of the part for all parts which change from bin to charged-out or charged-out to bin. The bin to charged-out is treated as a positive value and the charged-out to bin is negative value. A display of the total dollar differences of applying the threshold value is presented and the user is given the option to obtain a printed list of all changes, accept the change or enter a new threshold value. The list is annotated by part to indicate if the change is bin to charged-out or vice versa.

---

*Figures or instructions in square brackets may be used to demonstrate the system.

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18. ENTER VENDOR ADDRESS

     Use this to enter the code and name and address of all vendors you will

use when preparing purchase orders. At the time you prepare the purchase

order, the system will use the name and up to five lines of address

associated with the vendor code you enter.

19. FINISHED FOR NOW

     Used to end a session. The screen will display:

          YOU SHOULD MAKE A COPY OF THE CARTRIDGE
          -----------(TYPE A:A10FDUP)-------------
          PRESS ANY KEY
          WAITING

After you press a key you will get the C: prompt. You then should copy the
data on the Bernoulli Box cartridge by typing A:A10FDUP. Then follow
instructions displayed on the screen. This will produce a backup of the
data on the right cartridge.

CHAPTER V.   SYSTEM ENHANCEMENT

The system as presently implemented for LANTA provides a parts inventory and control function as well as certain maintenance management functions. Additional system components would be added to produce a complete maintenance management system. Examples of these components are:

o   Work order preparation and processing: This function will include work order preparation, defect description, materials used, labor hours and total job costing.

o   Vehicle history: This will include repairs by type and mileage when performed.

o   Failure analysis: This will include the capability to analyze the frequency of specific types of repairs by vehicle class, individual vehicle, or specific component in order to develop information for analyzing future maintenance requirements and improvements in vehicles.

o   Preventive maintenance scheduling: This function will consist of keeping track of vehicle mileage and inspection requirements, and identifying vehicles due for maintenance. It will also include the preparation of inspection checklists for each level of inspection.

o   Standard parts packages: This consists of the preparation of standard parts requisitions for parts used in preventive maintenance cycles and for other maintenance performed regularly but on an as-needed basis. The standard requisitions will eliminate the need to enter each part for these recurring jobs. In addition, this feature will also be useful for planning and implementing maintenance campaigns.

o   Consumables recordkeeping: This function will include the reporting of the use of fuel, oil and other consumables on a mileage basis. It will also provide for trend analysis and exception reporting (reporting of consumption above a threshold level) in order to identify maintenance problems.

o   Road call reports: This function will provide a log of road calls including both maintenance and nonmaintenance related road calls. Information will be available by several categories including by vehicle type, by operator, and by type of problem.

APPENDIX

COMPUTER LIST

```
13:13:07.66        C:\LANTA >TYPE CAPS.PRG
**START UP TO MAKE SURE USE CAPS-CAPS
ERASE
SET TALK OFF
SET EXACT ON
STORE T TO UC
DO WHILE UC
@ 2,0 SAY "PRESS Caps Lock KEY & ENTER U"
WAIT TO CAPS
@ 1,0
@ 2,0
@ 3,0
@ 4,0
IF CAPS = "U"
    STORE F TO UC
ELSE
    @ 1,0 SAY "  YOU MADE A MISTAKE PLEASE"
ENDIF
ENDDO UC
DO MENU
```

```
13:13:31.94        C:\LANTA >TYPE MENU.PRG
*MAIN MENU FOR THE PROGRAM
ERASE
SET TALK OFF
SET EXACT ON
DO WHILE T
@ 3,0 SAY "ENTER THE DESIRED NUMBER & PRESS RETURN"
@ 5,0 SAY " 1-ENTER STORES RECQUISITION"
@ 6,0 SAY " 2-GET STORES REQUISITION REPORT"
@ 7,0 SAY " 3-ENTER ORDER INFORMATION"
@ 8,0 SAY " 4-GET OPEN ORDERS REPORT"
@ 9,0 SAY " 5-ENTER RECEIPT OF PARTS"
@ 10,0 SAY" 6-GET INVENTORY LIST"
@ 11,0 SAY" 7-GET DATA SHEET FOR P I"
@ 12,0 SAY" 8-ENTER P I COUNT INFORMATION"
@ 13,0 SAY" 9-GET PI REPORT"
@ 14,0 SAY"10-ADJUST INVENTORY DUE TO PI COUNTS"
@ 15,0 SAY"11-DISPLAY VENDOR INFORMATION"
@ 16,0 SAY"12-DISPLAY ORDER INFORMATION"
@ 17,0 SAY"13-DISPLAY INVENTORY RECORDS"
@ 18,0 SAY"14-DISPLAY STORE RECQUISITION INFO"
@ 19,0 SAY"15-CREATE INVENTORY RECORDS"
@ 20,0 SAY"16-DISPLAY RECEIPT RECORDS"
@ 21,0 SAY"17-APPLY NEW THRESHOLD VALUE FOR CHARGED-OUT ITEMS"
@ 22,0 SAY"18-ENTER VENDOR NAME & ADDRESS INFORMATION"
@ 23,0 SAY"19-FINISHED FOR NOW"
ACCEPT TO C
DO CASE
    CASE C = "1"
    DO ENSTR

    CASE C = "2"
    DO SRLST

    CASE C = "3"
    DO ENORD

    CASE C = "4"
    DO ORDLST

    CASE C = "5"
    DO ENRCP

    CASE C = "6"
    DO INVLST

    CASE C = "7"
    DO PILST

    CASE C = "8"
    DO ENPI

    CASE C = "9"
    DO PIRPT

    CASE C = "10"
```

```
    DO PICR

    CASE C = "11"
    DO DYSVND

    CASE C = "12"
    DO DYSORD

    CASE C = "13"
    DO DYSINV

    CASE C = "14"
    DO DYSREQ

    CASE C = "15"
    DO CRINV

    CASE C = "16"
    DO DYSRCP

    CASE C = "17"
    DO THRS

    CASE C = "18"
    DO ENVEND

    CASE C = "19"
    USE
    QUIT

ENDCASE
ENDDO
```

```
13:16:06.88          C:\LANTA >TYPE ENSTR.PRG
*ENTER STORES RECQUISITION INFORMATION-"ENSTR"
SET TALK OFF
ERASE
*SELECT PRIMARY
USE INV INDEX PARTIND
*SELECT SECONDARY
USE INVTRL INDEX TRLIND
@ 1,0 SAY "ENTERING STORE RECQUISITION INFO"
DO WHILE T
STORE " " TO NOTHER
STORE O TO MSEQ
STORE "                        " TO MDATE
IF NOTHER <> "A"
@ 3,0 SAY"ENTER DATE MM/DD/YY          "GET MDATE PICTURE "##/##/##"
@ 4,0 SAY"ENTER SEQ # OR BLANK         " GET MSEQ PICTURE "#######"
READ
ENDIF
IF MSEQ = O
     USE
     RELEASE ALL
     ERASE
     RETURN
ENDIF
STORE T TO MORE
DO WHILE MORE
STORE "               " TO MPART
STORE "                   " TO MMECH,MGL
STORE   O TO MQR,MQD,MBUS
*SELECT PRIMARY
USE INV INDEX PARTIND
STORE T TO ENTER
DO WHILE ENTER
STORE T TO NOFIND
DO WHILE NOFIND
@ 5,0 SAY"ENTER BUS #                 " GET MBUS PICTURE "####"
@ 6,0 SAY"ENTER MECHANIC'S INITIALS   " GET MMECH PICTURE "XXXXXXXXXXXXXXXXXXXXX"
@ 7,0 SAY"ENTER GEN LEDGER COA #      " GET MGL PICTURE "###.####"
@ 8,0 SAY"ENTER MASTER PART #         " GET MPART PICTURE "XXXXXXXXXXXXX"
@ 9,0 SAY"ENTER QUANTITY REQUESTED    " GET MQR PICTURE "####"
@ 10,0 SAY"ENTER QUANTITY DELIVERED   " GET MQD PICTURE "####"
READ
FIND &MPART
IF # =O
   @ 13,0 SAY "CANNOT FIND PART,PLEASE PRESS RETURN & REENTER DATA"
   WAIT
   @ 13,0
   @ 14,0
   @ 15,0
   @ 17,0
   STORE T TO NOFIND
ELSE
   STORE QOH TO TOT
   IF TOT < MQR
      @ 13,0 SAY STR(MQR,4)+" OF"+DESC+" EXCEEDS STOCK"
      @ 14,0 SAY "ENTER I TO IGNORE OR RETURN TO REENTER DATA"
```

A-4

```
            WAIT TO INST
            IF INST <> "I"
                @ 13,0
                @ 14,0
                @ 15,0
                STORE T TO NOFIND
            ELSE
                STORE F TO NOFIND
            ENDIF
        ELSE
            STORE F TO NOFIND
        ENDIF
ENDIF
ENDDO
@ 13,0 SAY"DESCRIPTION FOR PART # IS:   "+DESC
STORE DESC TO MDESC
@ 15,0 SAY"THE TYPE IS:                 "+TYPE
STORE TYPE TO MTYPE
@ 17,0 SAY "ENTER C IF YOU WISH TO MAKE CORRECTIONS"
WAIT TO COR
@ 17,0
@ 18,0
IF COR <> "C"
        ERASE
        STORE F TO ENTER
ENDIF
ENDDO
*SELECT SECONDARY
USE INVTRL INDEX TRLIND
STORE T TO FLG
STORE O TO TOTAL,MAVG
STORE MQD TO D
FIND &MPART
*IF CANNOT FIND TRAILER RECORD FOR THE PART
IF # = O
        USE
        @ 19,0 SAY " NO RECORD FOR THIS PART PRESS ESC KEY"
*****STORE F TO FLG,MORE
ENDIF
DO WHILE PART = MPART .AND. .NOT. EOF .AND. FLG
IF QNTY = O
    SKIP
ELSE
        IF MQD <= QNTY
            REPLACE QNTY WITH QNTY-MQD
            STORE F TO FLG
            STORE (UNT:PRC*MQD)+TOTAL TO TOTAL
        ELSE
            STORE MQD-QNTY TO MQD
            STORE (UNT:PRC*QNTY)+TOTAL TO TOTAL
            REPLACE QNTY WITH O
            SKIP
        ENDIF
ENDIF
STORE TOTAL/D TO MAVG
ENDDO
```

A-5

```
*SELECT PRIMARY
USE INV INDEX PARTIND
FIND &MPART
*TEST IF DELIVERED MORE THAN QOH
IF D >= QOH
    REPLACE QOH WITH O,AVG WITH O
ELSE
    STORE (QOH*AVG-TOTAL)/(QOH-D) TO AVGSTK
    REPLACE QOH WITH QOH-D,AVG WITH AVGSTK
ENDIF
*ENTERING STORES RECQUISITION DATA TO STORES FILE
IF FILE ("SEQIND.NDX")
     USE STORES INDEX SEQIND
ELSE
     USE STORES
     INDEX ON SEQ TO SEQIND
     USE STORES INDEX SEQIND
ENDIF
APPEND BLANK
REPLACE DATE WITH MDATE,SEQ WITH MSEQ,BUS WITH MBUS,MECH WITH MMECH,;
        GL WITH MGL,PART WITH MPART,DESC WITH MDESC,QR WITH MQR,QD WITH MQD,;
        TYPE WITH MTYPE,AVG WITH MAVG
ERASE
@ 20,0 SAY "ENTER M IF YOU HAVE MORE DATA"
WAIT TO MRDATA
@ 20,0
@ 21,0
IF MRDATA <> "M"
     STORE F TO MORE
ENDIF
ERASE
ENDDO
@ 1,0 SAY "ENTER A IF YOU HAVE ANOTHER STORES REQUISITION"
WAIT TO NOTHER
@ 1,0
@ 2,0
IF NOTHER <> "A"
     USE
     ERASE
     RELEASE ALL
     RETURN
ENDIF
STORE T TO MORE
SELECT PRIMARY
USE INV INDEX PARTIND
ENDDO
```

```
13:19:20.55        C:\LANTA >TYOE   PE SRLST.PRG
*PRODUCE A LISTING OF STORES RECQUISITION DATA-"SRLST"
SET TALK OFF
ERASE
STORE " " TO COM
STORE O TO COM2
STORE "              " TO COM3
STORE "          " TO MDATE
STORE "          " TO D1,D2
@ 1,O SAY "ENTER DATE OF REPORT MM/DD/YY" GET MDATE PICTURE "##/##/##"
@ 3,O SAY "ENTER START DATE MM/DD/YY    " GET D1 PICTURE "##/##/##"
@ 5,O SAY "ENTER END DATE MM/DD/YY        " GET D2 PICTURE "##/##/##"
READ
STORE VAL($(D1,7,2)+$(D1,1,2)+$(D1,4,2)) TO START
STORE VAL($(D2,7,2)+$(D2,1,2)+$(D2,4,2)) TO END
@ 7,O SAY "ENTER TYPE OF REPORT DESIRED"
@ 8,O SAY "1-DETAILS FOR TIME PERIOD"
@ 9,O SAY "2-DETAILS BY BUS"
@ 10,O SAY "3-DETAILS BY MECHANIC"
@ 11,O SAY "4-TOTALS BY GL # FOR MONTH"
WAIT TO COM
USE STORES
DO CASE
    CASE COM = "1"
        SET FORMAT TO PRINT
        COPY TO STRPRNT FOR VAL($(DATE,7,2)+$(DATE,1,2)+$(DATE,4,2)) >=;
          START .AND. VAL($(DATE,7,2)+$(DATE,1,2)+$(DATE,4,2)) <= END
        USE STRPRNT
        INDEX ON SEQ TO SEQ2IND
        USE STRPRNT INDEX SEQ2IND
        DO SRLN

    CASE COM = "2"
        @ 15,O SAY "ENTER BUS # OR 9999 FOR ALL "
        INPUT TO COM2
        COPY TO STRPRNT FOR VAL($(DATE,7,2)+$(DATE,1,2)+$(DATE,4,2)) >=;
          START .AND. VAL($(DATE,7,2)+$(DATE,1,2)+$(DATE,4,2)) <= END
        SET FORMAT TO PRINT
        IF COM2 = 9999
        USE STRPRNT
        INDEX ON BUS TO BUSIND
        USE STRPRNT INDEX BUSIND
        DO SRLN
        ELSE
        USE STRPRNT
        DO SRLN
        ENDIF

    CASE COM = "3"
        @ 15,O SAY"ENTER MECH INITIALS,OR ALL" GET COM3 PICTURE "XXXXXXXXXX"
        READ
        SET FORMAT TO PRINT
        COPY TO STRPRNT FOR VAL($(DATE,7,2)+$(DATE,1,2)+$(DATE,4,2)) >=;
            START .AND. VAL($(DATE,7,2)+$(DATE,1,2)+$(DATE,4,2)) <= END
        IF COM3 = "ALL"
        USE STRPRNT
```

A-7

```
            INDEX ON MECH TO MECHIND
            USE STRPRNT INDEX MECHIND
            DO SRLN
            ELSE
            USE STRPRNT
            DO SRLN
            ENDIF

        CASE COM = "4"
            SET FORMAT TO PRINT
            COPY TO STRPRNT FOR $(DATE,1,2) = $(MDATE,1,2)
            USE STRPRNT
            INDEX ON GL TO GLIND
            USE STRPRNT INDEX GLIND
            STORE 0 TO TOTAL,TOT:DOL
            @ 2,40 SAY "GL TOTALS AT "+MDATE
            @ 3,0 SAY " FOR MONTH "+$(MDATE,1,2)
            @ 4,0 SAY "GL #"
            @ 4,10 SAY "TOTAL $"
            STORE 5 TO R
            DO WHILE .NOT. EOF
            STORE GL TO FLG
            @ R+1,0 SAY GL
            DO WHILE GL = FLG .AND. .NOT. EOF
                STORE GL TO FLG
                IF TYPE = "B"
                STORE (QD*AVG)+TOTAL TO TOTAL
                ENDIF
                SKIP
                IF R >= 60
                        STORE 1 TO CNTR
                        DO WHILE CNTR <= 10
                        STORE CNTR+1 TO CNTR
                        ? " "
                        ENDDO
                        STORE 5 TO R
                        @ 2,0 SAY "GL TOTALS FOR "+MDATE
                        @ 4,0 SAY "GL #"
                        @ 4,10 SAY "TOTAL $"
                ENDIF
                ENDDO
                @ R+1,10 SAY TOTAL
                STORE TOTAL + TOT:DOL TO TOT:DOL
                STORE 0 TO TOTAL
                STORE R+1 TO R
                ENDDO
ENDCASE
@ R+1,80 SAY "TOTAL FOR ALL PARTS"
@ R+2,83 SAY TOT:DOL USING "$$########.##"
EJECT
SET FORMAT TO SCREEN
USE
RELEASE ALL
ERASE
RETURN
```

```
13:21:55.55        C:\LANTA >TYPE SRLN.PRG
*USE TO PRINT BODY OF STORES REPORT-"SRLN"
STORE 5 TO R
DO HDRSTR
STORE R+1 TO R
STORE O TO TOT:DOL
DO WHILE .NOT. EOF
IF (TYPE = "B".AND. COM = "1") .OR. (COM2 = 9999 .AND. COM = "2") .OR.;
(COM2 = BUS .AND. COM = "2")   .OR. (COM3 = MECH .AND. COM = "3") .OR. (COM3;
 = "ALL" .AND. COM = "3")
   @ R,4 SAY DATE
   @ R,12 SAY SEQ
   @ R,22 SAY BUS
   @ R,27 SAY MECH
   @ R,38 SAY GL
   @ R,49 SAY PART
   @ R,64 SAY DESC
   @ R,85 SAY QR
   @ R,92 SAY QD
   @ R,99 SAY TYPE
   @ R,103 SAY AVG
   @ R,115 SAY QD*AVG
   STORE R+1 TO R
ENDIF
IF TYPE = "B"
   STORE (QD*AVG)+TOT:DOL TO TOT:DOL
ENDIF
   SKIP
IF R >= 60
     STORE 1 TO CNTR
     DO WHILE CNTR <= 10
     STORE CNTR+1 TO CNTR
     ? " "
     ENDDO
     STORE 5 TO R
     DO HDRIL
     STORE 6 TO R
ENDIF
ENDDO
@ R+1,80 SAY "TOTAL FOR ALL PARTS"
@ R+2,83 SAY TOT:DOL USING "$$########.##"
EJECT
SET FORMAT TO SCREEN
ERASE
RETURN
```

```
13:23:01.96        C:\LANTA >TYPE HDRSTR.PRG
*PRINT HEADER FOR STORES REC LIST-"HDRSTR"
STORE 5 TO R
DO CASE
     CASE COM = "1"
     @ 2,0 SAY "LIST OF ALL STORES RECQUISITION DATA AT "+MDATE
     @ 3,0 SAY "           FOR PERIOD "+D1+" TO "+D2
     CASE COM = "2"
     @ 2,0 SAY "LIST OF STORES RECQUISITION DATA BY BUS AT "+MDATE
     @ 3,0 SAY "           FOR PERIOD "+D1+" TO "+D2
     CASE COM = "3"
     @ 2,0 SAY "LIST OF STORES RECQUISITION DATA BY MECHANIC "+MDATE
     @ 3,0 SAY "           FOR PERIOD "+D1+" TO "+D2
ENDCASE
@ R,4 SAY "DATE"
@ R,15 SAY "SEQ #"
@ R,22 SAY "BUS "
@ R,27 SAY "MECHANIC"
@ R,38 SAY "GL #"
@ R,49 SAY "PART #"
@ R,64 SAY "DESCRIPTION"
@ R,85 SAY "# REQ"
@ R,92 SAY "# DRN"
@ R,99 SAY "TYPE"
@ R,103 SAY "    AVERAGE $"
@ R,123 SAY "TOTAL $"
RETURN
```

```
13:23:59.35         C:\LANTA >TYPE WNORD        ENORD. PRG      PRG
*USE TO ENTER ORDER DATA-"ENORD"
SET TALK OFF
ERASE
STORE " " TO MTYPE
STORE "     " TO MVEND
STORE "              " TO MPART,MOPART
STORE "         " TO MDATE:ORD,MGL
STORE "                    " TO MDESC
STORE O TO MPRC:DLV,MSHP:COST,MUNT:PRC
STORE O TO MQNTY:ORD,MQNTY:RCV,MPRC:QT,MSHP:COST,CNTR
STORE "      " TO MPO
STORE "                              " TO MNAME
STORE "                    " TO MLINE1,MLINE2,MLINE3,MLINE4,MLINE5
STORE T TO ENTER
DO WHILE ENTER
@ 1,O SAY "ENTERING ORDER INFO"
@ 2,O SAY "ENTER DATE OF ORDER MM/DD/YY" GET MDATE:ORD PICTURE "##/##/##"
@ 3,O SAY "ENTER PO # OR BLANK       " GET MPO PICTURE "XXXXX"
READ
IF MPO = "        "
     USE
     RELEASE ALL
     ERASE
     RETURN
ENDIF
STORE T TO NOFIND
DO WHILE NOFIND
@ 4,O SAY "ENTER VENDOR CODE          " GET MVEND PICTURE "XXXX"
READ
IF FILE ("ADDIND.NDX")
     USE VENDADD INDEX ADDIND
     FIND &MVEND
     IF # = O
          @ 5,O SAY "CANNOT FIND VENDOR, PLEASE REENTER"
          WAIT
          @ 4,O
          @ 5,O
          @ 6,O
          STORE T TO NOFIND
     ELSE
          STORE F TO NOFIND
     ENDIF
ELSE
     @ 5,O SAY "PRESS RETURN & ENTER DATA IN THE VENDOR FILE"
     WAIT
     USE
     ERASE
     RELEASE ALL
     RETURN
ENDIF
ENDDO
@ 5,O SAY NAME
@ 6,O SAY LINE1
@ 7,O SAY LINE2
@ 8,O SAY LINE3
```

A-11

```
@ 9,0 SAY LINE4
@ 10,0 SAY LINE5
STORE NAME TO MNAME
STORE LINE1 TO MLINE1
STORE LINE2 TO MLINE2
STORE LINE3 TO MLINE3
STORE LINE4 TO MLINE4
STORE LINE5 TO MLINE5
@ 11,0 SAY "ENTER C IF YOU WISH TO MAKE CORRECTIONS"
WAIT TO COR
@ 11,0
@ 12,0
IF COR <> "C"
     STORE F TO ENTER
ELSE
     ERASE
ENDIF
ENDDO
*SELECT PRIMARY
USE ORD
*SELECT SECONDARY
USE INV INDEX PARTIND
STORE T TO MORE
DO WHILE MORE
STORE T TO ENTER2
DO WHILE ENTER2
STORE T TO NOFIND
DO WHILE NOFIND
@ 17,0
@ 11,0 SAY"ENTER MASTER PART #            " GET MPART PICTURE "XXXXXXXXXXXXX"
@ 12,0 SAY "ENTER OTHER PART #            " GET MOPART PICTURE "XXXXXXXXXXXXX"
@ 13,0 SAY "ENTER QUANTITY ORDERED        " GET MQNTY:ORD PICTURE "####"
@ 14,0 SAY "ENTER UNIT PRICE QUOTED       " GET MPRC:QT PICTURE "########.##"
@ 15,0 SAY "ENTER GL#                     " GET MGL PICTURE "###.####"
@ 16,0 SAY "ENTER TYPE B OR C(CD)         " GET MTYPE PICTURE "X"
READ
*SELECT SECONDARY
USE INV INDEX PARTIND
FIND &MPART
     IF # = 0
          @ 17,0 SAY "CANNOT FIND PART,PRESS RETURN & PLEASE REENTER"
          WAIT
          STORE T TO NOFIND
          STORE "              " TO MPART
     ELSE
          STORE DESC TO MDESC
          @ 17,0 SAY DESC
          @ 18,0 SAY "HIT ANY KEY TO CONTINUE"
          WAIT
          @ 17,0
          @ 18,0
          @ 19,0
          STORE F TO NOFIND
     ENDIF
ENDDO
@ 17,0 SAY "ENTER C IF YOU WISH TO MAKE CORRECTIONS"
```

A-12

```
WAIT TO COR
@ 17,O
@ 18,O
IF COR <> "C"
     STORE F TO ENTER2
ENDIF
ENDDO
*SELECT PRIMARY
USE ORD
STORE CNTR+1 TO CNTR
APPEND BLANK
REPLACE VEND WITH MVEND,PART WITH MPART,OPART WITH MOPART,DATE:ORD;
        WITH MDATE:ORD,QNTY:ORD WITH MQNTY:ORD,PRC:QT WITH MPRC:QT;
        DESC WITH MDESC,PO WITH MPO,GL WITH MGL
@ 18,O SAY "ENTER M IF YOU HAVE MORE DATA"
WAIT TO MRDATA
@ 18,O
@ 19,O
IF MRDATA <> "M"
     STORE F TO MORE
ELSE
     STORE "                  " TO MPART,MOPART
     STORE O TO MQNTY:ORD,MPRC:QT
     STORE "          " TO MGL
     STORE " " TO MTYPE
ENDIF
ENDDO
     STORE T TO END
     DO WHILE END
     @ 18,O SAY "ENTER D TO DISPLAY OR P TO PRINT OR A TO ABORT"
     WAIT TO COM
     @ 18,O
     @ 19,O
     DO CASE

     CASE COM = "D"
         SKIP -(CNTR-1)
         ERASE
         @ 5,O SAY MNAME
         @ 6,O SAY MLINE1
         @ 7,O SAY MLINE2
         @ 8,O SAY MLINE3
         @ 9,O SAY MLINE4
         @ 10,O SAY MLINE5
         @ 11,O SAY "#"
         @ 11,8 SAY "QUANTITY"
         @ 11,25 SAY "DESCRIPTION"
         @ 11,47 SAY "PRICE"
         @ 11,57 SAY " GL# (O FOR BIN) "
         STORE 1 TO R
         STORE O TO TOT
         DO WHILE R <= CNTR
            STORE TOT + (QNTY:ORD*PRC:QT) TO TOT
            @ R+11,O SAY STR(R,2)
            @ R+11,8 SAY STR(QNTY:ORD,3)
            @ R+11,25 SAY DESC
```

A-13

```
            @ R+11,47 SAY STR(QNTY:ORD*PRC:QT,8,2)
            @ R+11,57 SAY GL
            SKIP
            STORE R+1 TO R
          ENDDO
            @ R+12,47 SAY STR(TOT,8,2)
            SKIP -1

      CASE COM = "P"
            SKIP -(CNTR-1)
            DO PRNTPO
            STORE F TO END

      CASE COM = "A"
            DELETE ALL FOR PO = MPO
            PACK
            ERASE
            STORE F TO END

      ENDCASE
      ENDDO
IF FILE ("ORDPOIND.NDX")
      USE ORD INDEX ORDPOIND
      REINDEX
ELSE
      USE ORD
      INDEX ON PO TO ORDPOIND
ENDIF
USE
ERASE
RELEASE ALL
RETURN
```

```
13:27:57.02        C:\LANTA >TYPE PRNTPO.PRG
*USE TO PRINT PO-"PRNTPO"
        STORE F TO FIX
        STORE "JANFEBMARAPRMAYJUNJULAUGSEPOCTNOVDEC" TO MNTHS
        STORE O TO TOT
        SET FORMAT TO PRINT
        @  1,O SAY " "
        STORE VAL($(MDATE:ORD,1,2)) TO I
        STORE ((I-1)*3)+1 TO N
        @ 11,73 SAY $(MDATE:ORD,4,2)+" "+$(MNTHS,N,3)+"     "+$(MDATE:ORD,7,2)
        @ 17,15 SAY MNAME
        @ 18,15 SAY MLINE1
        @ 19,15 SAY MLINE2
        @ 20,15 SAY MLINE3
        @ 21,15 SAY MLINE4
        @ 22,15 SAY MLINE5
        STORE 1 TO R
        DO WHILE R <=CNTR
        SKIP
        STORE TOT + (QNTY:ORD*PRC:QT) TO TOT
        @ 29+R,1 SAY STR(QNTY:ORD,4)+" ea."
        IF OPART = "                    "
            @ 29+R,39 SAY PART
        ELSE
            @ 29+R,39 SAY OPART
        ENDIF
        @ 29+R,54 SAY DESC
        @ 29+R,81 SAY "@"+STR(PRC:QT,11,2)
        @ 29+R,95 SAY STR((PRC:QT*QNTY:ORD),11,2)
        @ 29+R,115 SAY GL
        STORE R+1 TO R
        ENDDO
        @ 29+R,85 SAY "TOTAL "
        @ 29+R,95 SAY STR(TOT,11,2)
        EJECT
        ERASE
        SET FORMAT TO SCREEN
        RETURN
```

A-15

```
13:29:41.37          C:\LANTA >TYPE ORDLST.PRG
*PRODUCE A LISTING OF ORDER DATA-"ORDLST"
SET TALK OFF
ERASE
STORE "          " TO MDATE
@ 1,0 SAY "ENTER DATE OF REPORT MM/DD/YY" GET MDATE PICTURE "##/##/##"
READ
USE ORD INDEX ORDPOIND
SET FORMAT TO PRINT
@ 2,40 SAY "OPEN ORDERS FOR "+MDATE
STORE 5 TO R
DO HDRORD
STORE R+1 TO R
DO WHILE .NOT. EOF
IF QNTY:ORD > QNTY:RCV
@ R,0 SAY VEND
@ R,10 SAY PART
@ R,25 SAY OPART
@ R,40 SAY DATE:ORD
@ R,52 SAY QNTY:ORD
@ R,62 SAY QNTY:RCV
@ R,70 SAY PRC:QT
@ R,82 SAY PO
@ R,87 SAY PRC:DLV
@ R,105 SAY SHP:COST
@ R,114 SAY UNT:PRC
STORE R+1 TO R
ENDIF
SKIP
IF R >= 60
     STORE 1 TO CNTR
     DO WHILE CNTR <= 10
     STORE CNTR+1 TO CNTR
     ? " "
     ENDDO
     STORE 5 TO R
     DO HDRORD
     STORE 6 TO R
ENDIF
ENDDO
EJECT
SET FORMAT TO SCREEN
USE
ERASE
RELEASE ALL
RETURN
```

```
13:30:44.37        C:\LANTA >TYPE HDRORD.PRG
*HEADER FOR ORDER LIST-"HDRORD"
@ R,O SAY "VENDOR"
@ R,10 SAY "MASTER #"
@ R,25 SAY "OTHER #"
@ R,40 SAY "DATE ORD"
@ R,50 SAY "QNTY ORD"
@ R,60 SAY "QNTY RCV"
@ R,70 SAY "   PRICE QT"
@ R,82 SAY "PO #"
@ R,87 SAY "  PRICE DLV"
@ R,100 SAY "  SHIP COST"
@ R,113 SAY "   UNIT COST"
RETURN
```

```
13:31:37.82         C:\LANTA >TYPE ENCR RYPE       RCP.PEF   RG
*ENTER RECEIPT OF PARTS INFORMATION-"ENRCP"
SET TALK OFF
ERASE
STORE T TO MORE
DO WHILE MORE
STORE "          " TO MDATE
STORE "       " TO MPO
STORE "     " TO MVEND
STORE "             " TO MPART,MOPART
STORE O TO MQNTY:RCV,MPRC:DLV,MSHP:COST,MUNT:PRC
STORE T TO NOFIND
DO WHILE NOFIND
STORE T TO ENTER
DO WHILE ENTER
@ 1,O SAY "            ENTERING RECEIPT OF PARTS INFORMATION USE"
@ 2,O SAY "ZERO FOR QUANTITY RECEIVED & COST IF ENTERING ONLY SHIPPING COST"
@ 3,O SAY "ENTER DATE MM/DD/YY          " GET MDATE PICTURE "##/##/##"
@ 4,O SAY "ENTER PO # OR BLANK          " GET MPO PICTURE "XXXXX"
READ
IF MPO = "        "
     USE
     RELEASE ALL
     ERASE
     RETURN
ENDIF
@ 5,O SAY "ENTER VENDOR CODE            " GET MVEND PICTURE "XXXX"
@ 6,O SAY "ENTER PART #                 " GET MPART PICTURE "XXXXXXXXXXXX"
@ 7,O SAY "ENTER OTHER PART #           " GET MOPART PICTURE "XXXXXXXXXXXX"
@ 8,O SAY "ENTER QUANTITY RECEIVED      " GET MQNTY:RCV PICTURE "####"
@ 9,O SAY "ENTER TOTAL COST FOR  PART   " GET MPRC:DLV PICTURE "########.##"
@ 10,O SAY "ENTER SHIPPING COST FOR PART" GET MSHP:COST PICTURE "###.##"
READ
IF MQNTY:RCV = O
     @ 11,O SAY"******YOU ARE NOT ENTERING ANY QUANTITY RECEIVED******"
ENDIF
@ 12,O SAY"ENTER C IF YOU WISH TO MAKE CORRECTIONS"
WAIT TO COR
IF COR <> "C"
     ERASE
     STORE F TO ENTER
ENDIF
ENDDO
USE INVTRL INDEX TRLIND
FIND &MPART
IF # = O
     @ 14,O SAY "CANNOT FIND PART, PLEASE REENTER DATA"
     STORE T TO NOFIND
ELSE
     STORE F TO NOFIND
         *FIND LAST RECORD FOR THIS PART
         DO WHILE PART = MPART .AND. .NOT. EOF
             SKIP
         ENDDO
ENDIF
ENDDO
```

```
IF MQNTY:RCV <> O
     STORE (MPRC:DLV+MSHP:COST)/MQNTY:RCV TO MUNT:PRC
     *STORE NEW DATA AS NEXT RECORD FOR THAT PART
     APPEND BLANK
     REPLACE PO WITH MPO,PART WITH MPART,UNT:PRC WITH MUNT:PRC;
             QNTY WITH MQNTY:RCV,PRC:DLV WITH MPRC:DLV,SHP:COST WITH MSHP:COST
ELSE
     IF QNTY > O
          REPLACE SHP:COST WITH MSHP:COST,UNT:PRC WITH (PRC:DLV+MSHP:COST)/QNTY
     ENDIF
ENDIF
USE INV INDEX PARTIND
FIND &MPART
IF # = O
     @ 14,O SAY "CANNOT FIND PART IN INV RECORDS"
     @ 15,O SAY "PRESS **ESC** KEY TO GO BACK TO DOT PROMPT"
     WAIT
ENDIF
IF MQNTY:RCV <> O
     STORE (QOH*AVG)+MPRC:DLV+MSHP:COST TO TOTDOL
     REPLACE AVG WITH TOTDOL/(QOH +MQNTY:RCV),QOH WITH QOH+MQNTY:RCV
ELSE
     *ONLY ENTERED SHIP COST
     IF QOH <= O
          @ 16,O SAY " ZERO QUANTITY FOR "+PART+" - "+DESC
          REPLACE SHP:COST WITH MSHP:COST
          @ 17,O SAY " PLEASE EXPENSE A SHIPPING COST OF:"
          @ 18,O SAY SHP:COST PICTURE "$$###.##"
          @ 19,O SAY "PRESS ANY KEY TO CONTINUE"
          WAIT
     ELSE
          REPLACE SHP:COST WITH MSHP:COST,AVG WITH((QOH*AVG)+SHP:COST)/QOH
     ENDIF
ENDIF
STORE DESC TO MDESC
STORE T TO NOFIND2
DO WHILE NOFIND2
USE ORD INDEX ORDPOIND
FIND &MPO
IF # = O
     @ 14,O SAY "CANNOT FIND PURCHASE ORDER #"
     @ 15,O SAY "PLEASE REENTER PURCHASE ORDER #" GET MPO PICTURE "XXXXX"
     READ
     STORE T TO NOFIND2
ELSE
     STORE F TO NOFIND2
ENDIF
ENDDO
STORE T TO NOFIND3
DO WHILE NOFIND3
IF PART = MPART
     IF MQNTY:RCV <> O
          REPLACE QNTY:RCV WITH MQNTY:RCV,PRC:DLV WITH MPRC:DLV,SHP:COST;
                  WITH MSHP:COST,UNT:PRC WITH MUNT:PRC
          STORE F TO NOFIND3
     ELSE
```

A-19

```
          REPLACE SHP:COST WITH MSHP:COST,UNT:PRC WITH(PRC:DLV+MSHP:COST)/QNTY:RCV
     ENDIF
ELSE
     IF PO = MPO
          SKIP
     ELSE
          @ 17,0 SAY"CANNOT FIND PART #"
          @ 18,0 SAY"PLEASE REENTER PART #" GET MPART PICTURE "              "
          READ
          STORE T TO NOFIND3
     ENDIF
ENDIF
ENDDO
USE VEND
APPEND BLANK
IF MQNTY:RCV <> 0
     REPLACE VEND WITH MVEND,PART WITH MPART,OPART WITH MOPART,DESC WITH MDESC
     REPLACE PRC:DLV WITH MPRC:DLV,SHP:COST WITH MSHP:COST,UNT:PRC WITH MUNT:PRC
     REPLACE QNTY:RCV WITH MQNTY:RCV
     ERASE
ELSE
     REPLACE SHP:COST WITH MSHP:COST,UNT:PRC WITH(PRC:DLV+MSHP:COST)/QNTY:DLV
ENDIF
IF FILE ("VENPARIN.NDX")
     USE VEND INDEX VENPARIND
     REINDEX
ELSE
      USE VEND
      INDEX ON PART TO VENPARIN
      USE VEND INDEX VENPARIN
ENDIF
*STORE TRANSACTION DATA INTO RCP
USE RCP
APPEND BLANK
REPLACE PO WITH MPO,VEND WITH MVEND,PART WITH MPART,QNTY:RCV WITH MQNTY:RCV,;
          PRC:DLV WITH MPRC:DLV,SHP:COST WITH MSHP:COST,DATE WITH MDATE
@ 1,0 SAY "ENTER M IF YOU HAVE MORE DATA"
WAIT TO MRDATA
IF MRDATA <> "M"
     STORE F TO MORE
ENDIF
IF FILE ("RCPIND.NDX")
     USE RCP INDEX RCPIND
     REINDEX
ELSE
     INDEX ON PART TO RCPIND
ENDIF
ERASE
ENDDO
USE
RELEASE ALL
RETURN
```

```
13:36:56.60        C:\LANTA >TYPE INVLST.PRG
*PRODUCE A LISTING OF INVENTORY DATA-"INVLST"
SET TALK OFF
ERASE
STORE "        " TO MDATE
@ 1,0 SAY "ENTER DATE OF REPORT MM/DD/YY" GET MDATE PICTURE "##/##/##"
READ
USE INV INDEX PARTIND
SET FORMAT TO PRINT
@ 2,40 SAY "INVENTORY LIST FOR "+MDATE
STORE 5 TO R
DO HDRIL
STORE R+1 TO R
STORE 0 TO TOT:DOL
DO WHILE .NOT. EOF
@ R,4 SAY PART
@ R,17 SAY DESC
@ R,37 SAY LOC
@ R,45 SAY TYPE
@ R,51 SAY QOH
@ R,64 SAY MINQ
@ R,73 SAY MAXQ
@ R,82 SAY AVG USING "$$##.##"
@ R,95 SAY QOH*AVG USING "$$########.##"
IF QOH <= MINQ
     @ R,115 SAY "*******"
ENDIF
STORE (QOH*AVG)+TOT:DOL TO TOT:DOL
STORE R+1 TO R
SKIP
IF R >= 60
     STORE 1 TO CNTR
     DO WHILE CNTR <= 10
     STORE CNTR+1 TO CNTR
     ? " "
     ENDDO
     STORE 5 TO R
     DO HDRIL
     STORE 6 TO R
ENDIF
ENDDO
@ R+1,80 SAY "TOTAL FOR ALL PARTS"
@ R+2,83 SAY TOT:DOL USING "$$########.##"
EJECT
SET FORMAT TO SCREEN
USE
ERASE
RELEASE ALL
RETURN
```

A-21

```
13:38:13.33          C:\LANTA >TYPE HDRIL.PRG
@ R,4 SAY "PART #"
@ R,17 SAY "DESCRIPTION"
@ R,37 SAY "BIN #"
@ R,44 SAY "TYPE"
@ R,50 SAY "# ON HAND"
@ R,61 SAY "MIN QNTY"
@ R,71 SAY "MAX QNTY"
@ R,82 SAY "AVG $"
@ R,95 SAY "TOTAL $"
@ R,110 SAY "AT OR BELOW MIN #"
RETURN
```

```
13:38:51.01        C:\LANTA >TYPE PILST.PRG
*PRODUCE PRINTOUT FOR PI DATA COLLECTION-"PILST"
SET TALK OFF
ERASE
STORE "          " TO MDATE
@ 1,O SAY "ENTER DATE MM/DD/YY" GET MDATE PICTURE "##/##/##"
READ
USE INV
INDEX ON LOC TO LOCIND
USE INV INDEX LOCIND
SET FORMAT TO PRINT
*******PRINT HEADER LINE
DO HDR
STORE 6 TO R
DO WHILE .NOT. EOF
IF TYPE = "B"
     @ R,4 SAY LOC
     @ R,11 SAY PART
     @ R,24 SAY DESC
     @ R,44 SAY TYPE
     STORE R+2 TO R
ENDIF
SKIP
IF R >= 60
     STORE 1 TO CNTR
     DO WHILE CNTR <=10
        STORE CNTR+1 TO CNTR
        ? " "
     ENDDO
     DO HDR
     STORE 6 TO R
ENDIF
ENDDO
EJECT
SET FORMAT TO SCREEN
USE
RELEASE ALL
ERASE
RETURN
```

```
13:39:51.10        C:\LANTA >TYPE GDR,    HDR.PRG
*PRINT HEADER FOR PI LIST-"HDR"
STORE 5 TO R
@ 2,0 SAY "LIST FOR PHYSICAL INVENTORY AT "+MDATE
@ R,4 SAY "BIN #"
@ R,11 SAY "PART #"
@ R,24 SAY "DESCRIPTION"
@ R,44 SAY "TYPE"
@ R,50 SAY "# IN BIN FROM COUNT"
RETURN
```

*PRINT HEADER FOR PI LIST-"HDR"

```
13:40:25.49        C:\LANTA >TYPE ENPI.PRG
*ENTER CHANGES IN PHYSICAL INVENTORY-"ENPI"
SET TALK OFF
ERASE
STORE "       " TO MPO
STORE "      " TO MVEND
STORE "      " TO MLOC
STORE O TO MPICNT,MQNTY:RCV,MPRC:DLV,MSHP:COST,MUNT:PRC
@ 1,O SAY "ENTER PI COUNTS"
IF FILE ("LOCIND.NDX")
     USE INV INDEX LOCIND
ELSE
     USE INV
     INDEX ON LOC TO LOCIND
     USE INV INDEX LOCIND
ENDIF
DO WHILE .NOT. EOF
DO WHILE TYPE = "C" .AND. .NOT. EOF
    SKIP
ENDDO
@ 3,O SAY "PART                      :"+PART
@ 4,O SAY "DESCRIRTION               :"+DESC
@ 5,O SAY "BIN LOCATION              :"+LOC
STORE O TO MPICNT
@ 7,O SAY "ENTER NEW PI COUNT    :" GET MPICNT PICTURE "####"
READ
REPLACE PICNT WITH MPICNT
@ 11,O SAY " USE B-BACK, N-NEXT, G-GET A SPECIFIC RECORD, F-FINISHED"
WAIT TO COM
DO CASE

   CASE COM = "B"
   SKIP-1

   CASE COM = "N"
   SKIP

   CASE COM = "G"
      STORE T TO NOFIND
      DO WHILE NOFIND
         STORE "              " TO MPART
         @ 12,O SAY "ENTER LOCATION" GET MLOC PICTURE "XXXX"
         READ
         FIND &MLOC
           IF # = O
           STORE "    " TO MLOC
           @ 15,O SAY "PLEASE REENTER LOCATION" GET MLOC PICTURE "XXXX"
           READ
           STORE T TO NOFIND
           @ 15,O SAY "
           ELSE
           STORE F TO NOFIND
           ENDIF
      ENDDO

   CASE COM = "F"
```

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```
        USE
        RELEASE ALL
        ERASE                              A-26
        RETURN

ENDCASE
CLEAR GETS
ERASE
ENDDO
```

```
13:41:55.73          C:\LANTA >TYPE PIRPT.PRG
*PRODUCE A LISTING OF PI RESULTS-"PIRPT"
SET TALK OFF
ERASE
STORE "          " TO MDATE
@ 1,0 SAY "ENTER DATE OF REPORT MM/DD/YY" GET MDATE PICTURE "##/##/##"
READ
USE INV INDEX PARTIND
SET FORMAT TO PRINT
@ 2,40 SAY "PI REPORT FOR "+MDATE
STORE 5 TO R
DO HDRPIRP
STORE R+1 TO R
STORE O TO TOT:DOL
DO WHILE .NOT. EOF
IF TYPE = "B"
     @ R,4 SAY PART
     @ R,17 SAY DESC
     @ R,37 SAY LOC
     @ R,45 SAY TYPE
     @ R,51 SAY QOH
     @ R,64 SAY PICNT
     @ R,82 SAY AVG USING "$$##.##"
     @ R,95 SAY (QOH-PICNT)*AVG USING "$$########.##"
     IF QOH-PICNT <> O
          @ R,115 SAY "*******"
     ENDIF
     STORE ((QOH-PICNT)*(AVG))+TOT:DOL TO TOT:DOL
     STORE R+1 TO R
ENDIF
SKIP
IF R >= 60
     STORE 1 TO CNTR
     DO WHILE CNTR <= 10
     STORE CNTR+1 TO CNTR
     ? " "
     ENDDO
     STORE 5 TO R
     DO HDRPIRP
     STORE 6 TO R
ENDIF
ENDDO
@ R+1,80 SAY "TOTAL DIFFERENCE FOR ALL PARTS"
@ R+2,83 SAY TOT:DOL USING "$$########.##"
EJECT
SET FORMAT TO SCREEN
USE
RELEASE ALL
ERASE
RETURN
```

```
13:43:17.90          C:\LANTA >TYPE HDRPIRP.PRG
@ R,4 SAY "PART #"
@ R,17 SAY "DESCRIPTION"
@ R,37 SAY "BIN #"
@ R,44 SAY "TYPE"
@ R,50 SAY "# ON HAND"
@ R,61 SAY "PI COUNT"
@ R,82 SAY "AVG $"
@ R,95 SAY "$ DIFFERENCE"
@ R,110 SAY "DIFFERENCE IN COUNT"
RETURN
```

```
13:43:51.84          C:\LANTA >TYPE PICR.PRG
**CORRECTIONS ARE MADE TO INV &INVTRL RECORDS FROM PI-"PICR"
SET TALK OFF
ERASE
@ 1,O SAY "MAKING CORRECTIONS TO INVENTORY RECORDS DUE TO PI COUNT"
@ 2,O SAY "     RUN THIS ONLY AFTER ENTERING PI CORRECTIONS"
STORE "         " TO MDATE
@ 3,O SAY "ENTER DATE MM/DD/YY" GET MDATE PICTURE "##/##/##"
READ
STORE O TO TOTAL,DIFF,CNTR
STORE "P"+$(MDATE,1,2)+$(MDATE,7,2) TO MPO
SELECT PRIMARY
USE INVTRL INDEX TRLIND
SELECT SECONDARY
USE INV INDEX PARTIND
DO WHILE .NOT. EOF
IF TYPE = "B"
@ 15,O SAY "BIN:"+LOC+"-"+DESC
STORE AVG TO MAVG
STORE PART TO MPART
DO CASE
 CASE PICNT < QOH
      STORE QOH-PICNT TO MQD,D
      SELECT PRIMARY
      FIND &MPART
      IF # = O
           @ 10,O SAY "CANNOT FIND "+MPART
           @ 11,O SAY "HIT ANY KEY TO RETURN TO MENU"
           WAIT
           USE
           ERASE
           RELEASE ALL
           RETURN
      ENDIF
      STORE T TO FLG
      DO WHILE PART = MPART .AND. .NOT. EOF .AND. FLG
           IF QNTY = O
                SKIP
           ELSE
                IF MQD <= QNTY
                     REPLACE QNTY WITH QNTY-MQD
                     STORE (UNT:PRC*MQD)+TOTAL TO TOTAL
                     STORE F TO FLG
                ELSE
                     STORE MQD-QNTY TO MQD
                     STORE (UNT:PRC*QNTY)+TOTAL TO TOTAL
                     REPLACE QNTY WITH O
                     SKIP
                ENDIF
           ENDIF
      ENDDO
      STORE TOTAL/D TO MAVG
      *ADD RECORD FOR WITHDRAWAL
USE INVTRL INDEX TRLIND
      APPEND BLANK
      REPLACE PART WITH MPART,QNTY WITH O,PO WITH MPO,UNT:PRC WITH MAVG,;
```

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```
                   PIQNTY WITH -D
        REINDEX
        SELECT SECONDARY
        IF QOH = D
            REPLACE QOH WITH O,AVG WITH O
         ELSE
            STORE (QOH*AVG-TOTAL)/(QOH-D) TO AVGSTK
            REPLACE QOH WITH QOH-D,AVG WITH AVGSTK
        ENDIF
 CASE PICNT > QOH
     STORE PICNT-QOH TO MQD,D
     SELECT PRIMARY
     FIND &MPART
     IF # = O
         @ 10,O SAY "CANNOT FIND "+MPART
         @ 11,O SAY "HIT ANY KEY TO RETURN TO MENU"
         WAIT
         USE
         RELEASE ALL
         ERASE
         RETURN
     ENDIF
     STORE -(MQD*MAVG) TO TOTAL
     *ADD RECORD FOR ADDING STOCK
USE INVTRL INDEX TRLIND
     APPEND BLANK
     REPLACE PART WITH MPART,QNTY WITH MQD,PO WITH MPO,UNT:PRC WITH MAVG,;
             PIQNTY WITH D
     REINDEX
     SELECT SECONDARY
     REPLACE QOH WITH QOH+D
 CASE PICNT = QOH
     STORE O TO MQD,TOTAL
     SELECT SECONDARY
ENDCASE
STORE TOTAL + DIFF TO DIFF
STORE O TO TOTAL
ENDIF
SKIP
ENDDO
ERASE
@ 1,O SAY "TOTAL DIFFERENCE DUE TO PI ADJUSTMENT IS:"
@ 2,O SAY DIFF PICTURE "$$$$#####.##"
@ 5,O SAY "HIT ANY KEY TO RETURN TO MENU"
WAIT
USE
RELEASE ALL
ERASE
RETURN
```

```
13:46:18.22        C:\LANTA >TYPE DYSVND.PRG
*DISPLAY VENDOR INFO-"DYSVND"
SET TALK OFF
ERASE
STORE F TO ADD,PRC
STORE " " TO FIN
STORE "     " TO MVEND
STORE "             " TO MPART
STORE "                           " TO MLINE1,MLINE2,MLINE3,MLINE4,MLINE5
@ 1,O SAY "ENTER A TO GET ADDRESS DISPLAY,ANY KEY FOR PRICE DATA"
WAIT TO TYP
IF TYP = "A"
    STORE T TO ADD
ELSE
    STORE T TO PRC
ENDIF
DO WHILE PRC
@ 2,O SAY "ENTER VENDOR CODE      " GET MVEND PICTURE "XXXX"
@ 3,O SAY "ENTER MASTER PART #    " GET MPART PICTURE "XXXXXXXXXXXX"
READ
USE VEND INDEX VENPARIND
STORE MVEND+MPART TO SRC
STORE T TO NOFIND
DO WHILE NOFIND
FIND &SRC
    IF # = O
    ERASE
    GOTO TOP
    @ 1,O SAY "PLEASE REENTER VENDOR CODE  " GET MVEND PICTURE "XXXX"
    @ 2,O SAY "PLEASE REENTER MASTER PART #" GET MPART PICTURE "XXXXXXXXXXXX"
    READ
    STORE MVEND+MPART TO SRC
    STORE T TO NOFIND
    ELSE
        STORE F TO NOFIND
    ENDIF
ERASE
ENDDO
DO WHILE T
@ 1,O SAY "VENDOR NAME      "+VEND
@ 2,O SAY "PART #           "+PART
@ 3,O SAY "OTHER PART #     "+OPART
@ 4,O SAY "DESCRIPTION      "+DESC
@ 5,O SAY "TOTAL COST       "+STR(PRC:DLV,11,2)
@ 6,O SAY "SHIPPING COST    "+STR(SHP:COST,11,2)
@ 7,O SAY "UNIT PRICE       "+STR(UNT:PRC,11,2)
@ 8,O SAY "QNTY RECEIVED    "+STR(QNTY:RCV,4)
@ 10,O SAY"ENTER F IF FINISHED OR PRESS ANY BUTTON TO CONTINUE"
WAIT TO FIN
IF FIN = "F" .OR. EOF
    USE
    RELEASE ALL
    ERASE
    RETURN
ELSE
    SKIP
```

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```
ENDIF
ERASE
ENDDO
ENDDO
@ 3,0 SAY"ENTER VENDOR CODE " GET MVEND PICTURE "XXXX"
READ
USE VENDADD INDEX ADDIND
STORE T TO NOFIND2
DO WHILE NOFIND2
FIND &MVEND
IF # = 0
    @ 4,0 SAY "CANNOT FIND VENDOR PLEASE   "
    @ 5,0 SAY "ENTER VENDOR CODE" GET MVEND PICTURE "XXXX"
    READ
    GOTO TOP
    STORE T TO NOFIND2
    ERASE
ELSE
    STORE F TO NOFIND2
ENDIF
ERASE
ENDDO
DO WHILE T
@ 1,0 SAY NAME
@ 2,0 SAY LINE1
@ 3,0 SAY LINE2
@ 4,0 SAY LINE3
@ 5,0 SAY LINE4
@ 6,0 SAY LINE5
@ 10,0 SAY "ENTER F IF FINISHED,C TO CHANGE, ANY BUTTON TO CONTINUE"
WAIT TO FIN2
IF FIN2 = "F" .OR. EOF
    USE
    ERASE
    RELEASE ALL
    RETURN
ELSE
    IF FIN2 = "C"
      @ 11,0 SAY NAME
      @ 12,0 SAY "LINE 1" GET MLINE1 PICTURE "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
      @ 13,0 SAY "LINE 2" GET MLINE2 PICTURE "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
      @ 14,0 SAY "LINE 3" GET MLINE3 PICTURE "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
      @ 15,0 SAY "LINE 4" GET MLINE4 PICTURE "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
      @ 16,0 SAY "LINE 5" GET MLINE5 PICTURE "XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX"
    READ
    ERASE
    REPLACE LINE1 WITH MLINE1,LINE2 WITH MLINE2,LINE3 WITH MLINE3;
            LINE4 WITH MLINE4,LINE5 WITH MLINE5
    ELSE
      ERASE
      SKIP
    ENDIF
ENDIF
ENDDO
```

```
13:48:49.15          C:\LANTA >TYPE DYSORD.PRG
*DISPLAY ORDER INFO-"DYSORD"
SET TALK OFF
ERASE
USE ORD INDEX ORDPOIND
STORE T TO NOFIND
DO WHILE NOFIND
GOTO TOP
STORE "     " TO MPO
@ 2,0 SAY "ENTER PURCHASE ORDER # OR BLANK " GET MPO PICTURE "XXXXX"
READ
IF MPO = " "
    USE
    ERASE
    RELEASE ALL
    RETURN
ENDIF
FIND &MPO
    IF # = 0
    ERASE
    @ 1,0 SAY "PLEASE PRESS RETURN & REENTER PO #   "
    WAIT
    ERASE
    STORE T TO NOFIND
    ELSE
        STORE F TO NOFIND
    ENDIF
ERASE
ENDDO
DO WHILE T
@ 1,0 SAY "PURCHASE ORDER # "+PO
@ 2,0 SAY "VENDOR NAME       "+VEND
@ 3,0 SAY "PART #            "+PART
@ 4,0 SAY "OTHER PART #      "+OPART
@ 5,0 SAY "DATE ORDERED      "+DATE:ORD
@ 6,0 SAY "QNTY ORDERED      "+STR(QNTY:ORD,4)
@ 7,0 SAY "QNTY RECEIVED     "+STR(QNTY:RCV,4)
@ 8,0 SAY "PRICE QUOTED      "+STR(PRC:QT,11,2)
@ 9,0 SAY "TOTAL COST"+STR(PRC:DLV,11,2)
@ 10,0 SAY "SHIPPING COST      "+STR(SHP:COST,11,2)
@ 11,0 SAY "UNIT PRICE         "+STR(UNT:PRC,11,2)
@ 13,0 SAY"ENTER F IF FINISHED OR PRESS ANY BUTTON TO CONTINUE"
WAIT TO FIN
IF FIN = "F" .OR. EOF
    USE
    ERASE
    RELEASE ALL
    RETURN
ELSE
    SKIP
ENDIF
ENDDO
```

```
13:50:36.97        C:\LANTA >TYPE DYSINV.PRG
*DISPLAY INVENTORY INFO-"DYSINV"
SET TALK OFF
ERASE
STORE " " TO FIN
USE INV INDEX PARTIND
STORE T TO NOFIND
DO WHILE NOFIND
STORE "     " TO MVEND
STORE "            " TO MPART
@ 3,0 SAY "ENTER MASTER PART #     " GET MPART PICTURE "XXXXXXXXXXXX"
@ 4,0 SAY "ENTER BLANK TO RETURN TO MENU"
READ
IF MPART = " "
     USE
     ERASE
     RELEASE ALL
     RETURN
ENDIF
GOTO TOP
FIND &MPART
     IF # = O
          ERASE
          @ 2,0 SAY "PRESS RETURN & REENTER MASTER PART #"
          WAIT
          STORE T TO NOFIND
     ELSE
          STORE F TO NOFIND
     ENDIF
ERASE
ENDDO
DO WHILE T
@ 2,0 SAY "PART #            "+PART
@ 3,0 SAY "DESCRIPTION       "+DESC
@ 4,0 SAY "BIN LOCATION      "+LOC
@ 5,0 SAY "TYPE             "+TYPE
@ 6,0 SAY "QNTY ON HAND      "+STR(QOH,4)
@ 7,0 SAY "MIN QNTY          "+STR(MINQ,2)
@ 8,0 SAY "MAX QNTY          "+STR(MAXQ,4)
@ 9,0 SAY "AVERAGE COST      "+STR(AVG,11,2)
@ 10,0 SAY"PI COUNT          "+STR(PICNT,4)
@ 12,0 SAY"ENTER F IF FINISHED, C TO CHANGE MIN OR MAX VALUES OR ANY BUTTON TO;
 CONTINUE"
WAIT TO FIN
IF FIN = "F" .OR. EOF
     USE
     RELEASE ALL
     ERASE
     RETURN
ELSE
     IF FIN = "C"
          STORE O TO MMINQ,MMAXQ
          @ 14,0 SAY "ENTER NEW MINIMUM QUANTITY " GET MMINQ PICTURE "####"
          @ 15,0 SAY "ENTER NEW MAXIMUM QUANTITY " GET MMAXQ PICTURE "####"
          READ
          REPLACE MINQ WITH MMINQ,MAXQ WITH MMAXQ
```

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```
    ELSE
         SKIP
    ENDIF
ENDIF
ERASE
ENDDO
RETURN
```

```
13:52:06.39          C:\LANTA >TYPE DYSREQ.PRG
*DISPLAY REQUISITION INFO-"DYSREQ"
SET TALK OFF
ERASE
USE STORES INDEX SEQIND
STORE T TO NOFIND
DO WHILE NOFIND
STORE "       " TO MSEQ
@ 2,0 SAY "ENTER SEQUENCE # OR BLANK" GET MSEQ PICTURE "XXXXXXX"
READ
IF MSEQ = " "
    USE
    ERASE
    RELEASE ALL
    RETURN
ENDIF
GOTO TOP
FIND &MSEQ
    IF # = O
        ERASE
        @ 1,0 SAY "PRESS RETURN & REENTER SEQ # "
        WAIT
        STORE T TO NOFIND
    ELSE
        STORE F TO NOFIND
    ENDIF
ERASE
ENDDO
DO WHILE T
@ 1,0 SAY "DATE                "+DATE
@ 2,0 SAY "SEQUENCE #          "+STR(SEQ,7)
@ 3,0 SAY "BUS #               "+STR(BUS,4)
@ 4,0 SAY "MECHANIC            "+MECH
@ 5,0 SAY "GEN LEDGER #        "+GL
@ 6,0 SAY "PART #              "+PART
@ 7,0 SAY "DESCRIPTION         "+DESC
@ 8,0 SAY "QNTY REQUESTED      "+STR(QR,4)
@ 9,0 SAY "QNTY DELIVERED      "+STR(QD,4)
@ 10,0 SAY "TYPE               "+TYPE
@ 11,0 SAY "PRICE OF PART      "+STR(AVG,11,2)
@ 13,0 SAY"ENTER F IF FINISHED OR PRESS ANY BUTTON TO CONTINUE"
WAIT TO FIN
IF FIN = "F" .OR. EOF
    USE
    ERASE
    RELEASE ALL
    RETURN
ELSE
    SKIP
ENDIF
ERASE
ENDDO
RETURN
```

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```
13:53:31.58         C:\LANTA >TYPE CRINV.PRG
*CREATE INVENTORY RECORDS-"CRINV"
SET TALK OFF
ERASE
SELECT PRIMARY
USE INV
SELECT SECONDARY
USE INVTRL
STORE T TO MORE
DO WHILE MORE
STORE "               " TO MPART,MOPART
STORE "                     " TO MDESC
STORE "       " TO MLOC
STORE " " TO MTYPE
STORE O TO MQOH,MAVG,MMINQ,MMAXQ,MQOH1,MQOH2,MAVG1,MAVG2
STORE "     " TO MVEND
STORE T TO ENTER
DO WHILE ENTER
@ 1,O SAY "ENTERING INVENTORY RECORDS"
@ 2,O SAY "MASTER PART # OR BLANK      " GET MPART PICTURE "XXXXXXXXXXXX"
READ
IF MPART = "               "
     USE
     RELEASE ALL
     ERASE
     RETURN
ENDIF
@ 3,O SAY "ENTER OTHER MFG'S PART #      " GET MOPART PICTURE "XXXXXXXXXXXX"
@ 4,O SAY "ENTER DESCRIPTION            "GET MDESC PICTURE"XXXXXXXXXXXXXXXXXXXXX"
@ 5,O SAY "ENTER BIN LOCATION           " GET MLOC PICTURE "XXXXX"
@ 6,O SAY "ENTER TYPE B OR C(CD)        " GET MTYPE PICTURE "X"
@ 7,O SAY "ENTER 1st QUANTITY ON HAND   " GET MQOH1 PICTURE "####"
@ 8,O SAY "ENTER 1st AVERAGE UNIT PRICE" GET MAVG1 PICTURE "########.##"
@ 9,O SAY "ENTER 2nd QUANTITY ON HAND   " GET MQOH2 PICTURE "####"
@ 10,O SAY"ENTER 2nd AVERAGE UNIT PRICE" GET MAVG2 PICTURE "########.##"
@ 11,O SAY"ENTER MINIMUM QUANTITY       " GET MMINQ PICTURE "##"
@ 12,O SAY"ENTER MAXIMUM QUANTITY       " GET MMAXQ PICTURE "####"
@ 13,O SAY "ENTER VENDOR CODE           " GET MVEND PICTURE "XXXX"
READ
STORE MQOH1+MQOH2 TO MQOH
STORE (MQOH1*MAVG1+MQOH2*MAVG2)/MQOH TO MAVG
@ 15,O SAY "ENTER C IF YOU WISH TO MAKE CORRECTIONS"
WAIT TO COR
@ 15,O
@ 16,O
IF COR <> "C"
     ERASE
     STORE F TO ENTER
ENDIF
ENDDO
SELECT PRIMARY
USE INV
APPEND BLANK
REPLACE PART WITH MPART,DESC WITH MDESC,LOC WITH MLOC,TYPE WITH MTYPE,;
        QOH WITH MQOH,MINQ WITH MMINQ,MAXQ WITH MMAXQ,AVG WITH MAVG
SELECT SECONDARY
```

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```
USE INVTRL
APPEND BLANK
REPLACE PART WITH MPART,QNTY WITH MQOH1,PRC:DLV WITH MAVG1,SHP:COST WITH O,;
        PO WITH "                  ",UNT:PRC WITH MAVG1
IF MQOH2 > O
     APPEND BLANK
     REPLACE PART WITH MPART,QNTY WITH MQOH2,PRC:DLV WITH MAVG2,;
             SHP:COST WITH O, PO WITH "                  ",UNT:PRC WITH MAVG2
ENDIF
USE VEND
APPEND BLANK
REPLACE VEND WITH MVEND,PART WITH MPART,OPART WITH MOPART,DESC WITH MDESC,;
        PRC:DLV WITH MAVG,SHP:COST WITH O,UNT:PRC WITH MAVG
ERASE
@ 20, O SAY "ENTER M IF YOU HAVE MORE DATA"
WAIT TO MRDATA
@ 20,O
@ 21,O
IF MRDATA <> "M"
     ERASE
     STORE F TO MORE
     @ 5,O SAY "****THIS MAY TAKE SEVERAL MINUTES****"
ELSE
     USE INVTRL
ENDIF
ENDDO
IF FILE ("PARTIND.NDX")
    USE INV INDEX PARTIND
    REINDEX
ELSE
    USE INV
    INDEX ON PART TO PARTIND
ENDIF
IF FILE ("TRLIND.NDX")
    USE INVTRL INDEX TRLIND
    REINDEX
ELSE
    USE INVTRL
    INDEX ON PART TO TRLIND
ENDIF
IF FILE ("VENPARIN.NDX")
    USE VEND INDEX VENPARIN
    REINDEX
ELSE
    USE VEND
    INDEX ON VEND+PART TO VENPARIN
ENDIF
IF FILE ("LOCIND.NDX")
    USE INV INDEX LOCIND
    REINDEX
ELSE
    USE INV
    INDEX ON LOC TO LOCIND
ENDIF
USE
ERASE
```

```
RELEASE ALL
RETURN
```

```
13:56:13.22        C:\LANTA >TYPE DYSC RCP.PRG
*DISPLAY RECEIPT INFO-"DYSRCP"
SET TALK OFF
ERASE
STORE " " TO FIN
STORE "     " TO MVEND
USE RCP INDEX RCPIND
STORE T TO NOFIND
DO WHILE NOFIND
STORE "                " TO MPART
@ 3,0 SAY "ENTER MASTER PART # OR BLANK" GET MPART PICTURE "XXXXXXXXXXXXX"
READ
IF MPART = " "
    USE
    ERASE
    RELEASE ALL
    RETURN
ENDIF
GOTO TOP
FIND &MPART
    IF # = 0
        ERASE
        @ 2,0 SAY "PRESS RETURN & REENTER MASTER PART #"
        WAIT
        STORE T TO NOFIND
    ELSE
        STORE F TO NOFIND
    ENDIF
ERASE
ENDDO
DO WHILE T
@ 2,0 SAY "PART #            "+PART
@ 3,0 SAY "PO #             "+PO
@ 4,0 SAY "VENDOR           "+VEND
@ 5,0 SAY "QUANTITY RECVD   "+STR(QNTY:RCV,4)
@ 6,0 SAY "TOTAL COST       "+STR(PRC:DLV,11,2)
@ 7,0 SAY "SHIPPING COST    "+STR(SHP:COST,5,2)
@ 8,0 SAY "DATE DELIVERED   "+DATE
@ 12,0 SAY"ENTER F IF FINISHED OR PRESS ANY BUTTON TO CONTINUE"
WAIT TO FIN
IF FIN = "F" .OR. EOF
    USE
    ERASE
    RELEASE ALL
    RETURN
ELSE
   SKIP
ENDIF
ENDDO
ERASE
```

```
13:57:49.40        C:\LANTA >TYPE THRS.PRG
*APPLY THRESHOLD FOR CD AND BIN-"THRS"
SET TALK OFF
ERASE
STORE T TO ENTER
DO WHILE ENTER
@ 1,0 SAY "ENTER THRESHOLD VALUE FOR CD AND PRESS RETURN"
ACCEPT TO X
SELECT PRIMARY
USE INV INDEX PARTIND
COPY TO THTEST ALL FOR (TYPE = "C" .AND. AVG > &X) .OR. (TYPE = "B" .AND. AVG;
 < &X)
SELECT SECONDARY
USE THTEST
STORE 0 TO TOT1
DO WHILE .NOT. EOF
IF AVG < &X
     STORE QOH*AVG+ TOT1 TO TOT1
ELSE
     STORE TOT1-(QOH*AVG) TO TOT1
ENDIF
SKIP
ENDDO
STORE T TO ENTER2
DO WHILE ENTER2
@ 3,0 SAY "TOTAL CORRECTION IS "
@ 4,0 SAY TOT1 PICTURE "$$######.##"
@ 7,0 SAY "ENTER P TO PRINT LIST OF ITEMS CHANGED"
@ 9,0 SAY "ENTER A TO ACCEPT THE CHANGE"
@ 11,0 SAY "ENTER N TO TRY A NEW VALUE FOR THE THRESHOLD VALUE"
@ 13,0 SAY "PRESS RETURN TO GO BACK TO MENU WITH NO CHANGE"
WAIT TO COM
STORE F TO ENTER2
DO CASE

     CASE COM = "P"
     SELECT SECONDARY
     GO TOP
     STORE 0 TO TOT1
     STORE "          " TO MDATE
     ERASE
     @ 1,0 SAY "ENTER DATE MM/DD/YY OF REPORT" GET MDATE PICTURE "##/##/##"
     READ
     SET FORMAT TO PRINT
     @ 2,40 SAY "INVENTORY LIST OF ITEMS CHANGED ON "+MDATE
     STORE 5 TO R
     @ R,4 SAY "PART #"
     @ R,17 SAY "DESCRIPTION"
     @ R,37 SAY "BIN #"
     @ R,44 SAY "TYPE"
     @ R,50 SAY "# ON HAND"
     @ R,61 SAY "MIN QNTY"
     @ R,71 SAY "MAX QNTY"
     @ R,82 SAY "AVG $"
     @ R,95 SAY "TOTAL $"
     STORE R+1 TO R
```

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```
      DO WHILE .NOT. EOF
      @ R,4 SAY PART
      @ R,17 SAY DESC
      @ R,37 SAY LOC
      @ R,45 SAY TYPE
      @ R,51 SAY QOH
      @ R,64 SAY MINQ
      @ R,73 SAY MAXQ
      @ R,82 SAY AVG USING "$$##.##"
      @ R,95 SAY QOH*AVG USING "$$########.##"
      DO CASE

          CASE AVG < &X
          STORE QOH*AVG + TOT1 TO TOT1
          @ R,123 SAY "BIN TO CD"

          CASE AVG > &X
          STORE TOT1 -(QOH*AVG) TO TOT1
          @ R,123 SAY "CD TO BIN"

      ENDCASE
      SKIP
      STORE R+1 TO R
      IF R > 60
          EJECT
          STORE 5 TO R
      ENDIF
      ENDDO
      @ R+2,83 SAY TOT1 USING "$$########.##"
      @ R+3,50 SAY "USING NEW THRESHOLD VALUE OF $ "+X
      EJECT
      SET FORMAT TO SCREEN
      ERASE
      STORE T TO ENTER2

      CASE COM = "A"
      ERASE
      @ 1,0 SAY "PLEASE WAIT THIS MAY TAKE A FEW MINUTES"
      SELECT PRIMARY
      REPLACE ALL TYPE WITH "B" FOR TYPE = "C" .AND. AVG > &X
      REPLACE ALL TYPE WITH "C" FOR TYPE = "B" .AND. AVG < &X
      ERASE
      RETURN

      CASE COM = "N"
      STORE T TO ENTER
      ERASE

      OTHERWISE
      USE
      RELEASE ALL
      ERASE
      RETURN

ENDCASE
ENDDO
```

```
ENDDO
USE
ERASE
RELEASE ALL
RETURN
```

```
14:00:38.08        C:\LANTA >TYPE ENVEND.PRG
*USE TO ENTER VENDOR NAME & ADDRESS-"ENVEND"
SET TALK OFF
ERASE
STORE "    " TO MVEND
STORE "                              " TO MNAME
STORE "                              " TO MLINE1,MLINE2,MLINE3,MLINE4,MLINE5
USE VENDADD
STORE T TO MORE
DO WHILE MORE
STORE T TO ENTER
DO WHILE ENTER
@ 4,0 SAY "ENTER VENDOR CODE          " GET MVEND PICTURE "XXXX"
@ 5,0 SAY "ENTER VENDOR NAME          " GET MNAME PICTURE "XXXXXXXXXXXXXXXXX;
XXXXXXXXXXXX"
@ 6,0 SAY "ENTER ADDRESS LINE #1      " GET MLINE1 PICTURE "XXXXXXXXXXXXXXXX;
XXXXXXXXXXXXXX"
@ 7,0 SAY "ENTER ADDRESS LINE #2      " GET MLINE2 PICTURE "XXXXXXXXXXXXXXXX;
XXXXXXXXXXXXXX"
@ 8,0 SAY "ENTER ADDRESS LINE #3      " GET MLINE3 PICTURE "XXXXXXXXXXXXXXXX;
XXXXXXXXXXXXXX"
@ 9,0 SAY "ENTER ADDRESS LINE #4      " GET MLINE4 PICTURE "XXXXXXXXXXXXXXXX;
XXXXXXXXXXXXXX"
@ 10,0 SAY"ENTER ADDRESS LINE #5      " GET MLINE5 PICTURE "XXXXXXXXXXXXXXXX;
XXXXXXXXXXXXXX"
READ
@ 11,0 SAY "ENTER C IF YOU WISH TO MAKE CORRECTIONS"
WAIT TO COR
@ 11,0
@ 12,0
IF COR <> "C"
     STORE F TO ENTER
ENDIF
ENDDO
APPEND BLANK
REPLACE VEND WITH MVEND,NAME WITH MNAME,LINE1 WITH MLINE1,LINE2 WITH MLINE2;
        LINE3 WITH MLINE3,LINE4 WITH MLINE4,LINE5 WITH MLINE5
@ 18,0 SAY "ENTER M IF YOU HAVE MORE DATA"
WAIT TO MRDATA
@ 18,0
@ 19,0
IF MRDATA <> "M"
     STORE F TO MORE
ELSE
     STORE "                              " TO MNAME,MLINE5
     STORE "    " TO MVEND
     STORE "                              " TO MLINE1,MLINE2,MLINE3,MLINE4
ENDIF
ENDDO
IF FILE ("ADDIND.NDX")
     USE VENDADD INDEX ADDIND
     REINDEX
ELSE
     INDEX ON VEND TO ADDIND
ENDIF
USE
```

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```
RELEASE ALL
ERASE
RETURN
```

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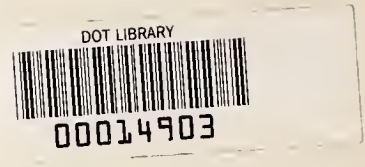
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